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Annex Reference	METEOROLOGICAL SERVICE FOR INTERNATIONAL AIR NAVIGATION Standard or Recommended Practice	State Legislation, Regulation or Document Reference	Level of implementation of SARP's	Text of the difference to be notified to ICAO	Comments including the reason for the difference
<p>Chapter 1 Reference</p> <p>Definition</p>	<p style="text-align: center;">INTERNATIONAL STANDARDS AND RECOMMENDED PRACTICES</p> <p style="text-align: center;">PART I</p> <p style="text-align: center;">CORE SARP's</p> <p style="text-align: center;">CHAPTER 1. DEFINITIONS</p> <p><i>Note.— The designation (RR) in these definitions indicates a definition which has been extracted from the Radio Regulations of the International Telecommunication Union (ITU) (see Handbook on Radio Frequency Spectrum Requirements for Civil Aviation including Statement of Approved ICAO Policies (Doc 9718)).</i></p> <p style="text-align: center;">1.1 Definitions</p> <p>When the following terms are used in the Standards and Recommended Practices for Meteorological Service for International Air Navigation, they have the following meanings:</p> <p>Aerodrome. A defined area on land or water (including any buildings, installations and equipment) intended to be used either wholly or in part for the arrival, departure and surface</p>	<p>CV-CAR 1616.A.115(2)</p>	<p>No Difference</p>		



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	movement of aircraft.				
Chapter 1 Reference Definition	<i>Aerodrome climatological summary.</i> Concise summary of specified meteorological elements at an aerodrome, based on statistical data.	CV-CAR 1616.A.115CV-CAR 1616.A.115(77)	No Difference		
Chapter 1 Reference Definition	<i>Aerodrome climatological table.</i> Table providing statistical data on the observed occurrence of one or more meteorological elements at an aerodrome.	CV-CAR 1616.A.115(79)	No Difference		
Chapter 1 Reference Definition	<i>Aerodrome control tower.</i> A unit established to provide air traffic control service to aerodrome traffic.	CV-CAR 1616.A.115(80)	No Difference		
Chapter 1 Reference Definition	<i>Aerodrome elevation.</i> The elevation of the highest point of the landing area.	CV-CAR 1616.A.115(34)	No Difference		



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Chapter 1 Reference Definition	<i>Aerodrome meteorological office.</i> An office designated to provide meteorological service for aerodromes serving international air navigation.	CV-CAR 1616.A.115(24)	No Difference		
Chapter 1 Reference Definition	<i>Aerodrome reference point.</i> The designated geographical location of an aerodrome.	CV-CAR 1616.A.115(64)	No Difference		
Chapter 1 Reference Definition	<i>Aeronautical fixed service (AFS).</i> A telecommunication service between specified fixed points provided primarily for the safety of air navigation and for the regular, efficient and economical operation of air services.	CV-CAR 1616.A.115(71)	No Difference		
Chapter 1 Reference Definition	<i>Aeronautical fixed telecommunication network (AFTN).</i> A worldwide system of aeronautical fixed circuits provided, as part of the aeronautical fixed service, for the exchange of messages and/or digital data between aeronautical fixed stations having the same or compatible communications characteristics.	CV-CAR 1616.A.115(68)	No Difference		
Chapter 1 Reference Definition	<i>Aeronautical meteorological station.</i> A station designated to make observations and meteorological reports for use in international air navigation.	CV-CAR 1616.A.115(36)	No Difference		



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Chapter 1 Reference Definition	<i>Aeronautical mobile service (RR S1.32).</i> A mobile service between aeronautical stations and aircraft stations, or between aircraft stations, in which survival craft stations may participate; emergency position-indicating radio beacon stations may also participate in this service on designated distress and emergency frequencies.	CV-CAR 1616.A.115(71)	No Difference		
Chapter 1 Reference Definition	<i>Aeronautical telecommunication station.</i> A station in the aeronautical telecommunication service.	CV-CAR 1616.A.115(35)	No Difference		
Chapter 1 Reference Definition	<i>Aircraft.</i> Any machine that can derive support in the atmosphere from the reactions of the air other than the reactions of the air against the earth's surface.	CV-CAR 1616.A.115(4)	No Difference		
Chapter 1 Reference Definition	<i>Aircraft observation.</i> The evaluation of one or more meteorological elements made from an aircraft in flight.	CV-CAR 1616.A.115(54)	No Difference		



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Chapter 1 Reference Definition	AIRMET information. Information issued by a meteorological watch office concerning the occurrence or expected occurrence of specified en-route weather phenomena which may affect the safety of low-level aircraft operations and which was not already included in the forecast issued for low-level flights in the flight information region concerned or sub-area thereof.	CV-CAR 1616.A.115(41)	No Difference		
Chapter 1 Reference Definition	Air-report. A report from an aircraft in flight prepared in conformity with requirements for position, and operational and/or meteorological reporting. <i>Note.— Details of the AIREP form are given in the PANS-ATM (Doc 4444).</i>	CV-CAR 1616.A.115(5)	No Difference		
Chapter 1 Reference Definition	Air traffic services unit. A generic term meaning variously, air traffic control unit, flight information centre or air traffic services reporting office.	CV-CAR 1616.A.115(73)	No Difference		



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Chapter 1 Reference Definition	<p>Alternate aerodrome. An aerodrome to which an aircraft may proceed when it becomes either impossible or inadvisable to proceed to or to land at the aerodrome of intended landing where the necessary services and facilities are available, where aircraft performance requirements can be met and which is operational at the expected time of use. Alternate aerodromes include the following:</p> <p><i>Take-off alternate.</i> An alternate aerodrome at which an aircraft would be able to land should this become necessary shortly after take-off and it is not possible to use the aerodrome of departure.</p> <p><i>En-route alternate.</i> An alternate aerodrome at which an aircraft would be able to land in the event that a diversion becomes necessary while en route.</p> <p><i>Destination alternate.</i> An alternate aerodrome at which an aircraft would be able to land should it become either impossible or inadvisable to land at the aerodrome of intended landing.</p> <p><i>Note.— The aerodrome from which a flight departs may also be an en-route or a destination alternate aerodrome for that flight.</i></p>	CV-CAR 1616.A.115(3)	No Difference		
Chapter 1 Reference Definition	<p>Altitude. The vertical distance of a level, a point or an object considered as a point, measured from mean sea level (MSL).</p>	CV-CAR 1616.A.115(9)	No Difference		



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Chapter 1 Reference Definition	Approach control unit. A unit established to provide air traffic control service to controlled flights arriving at, or departing from, one or more aerodromes.	CV-CAR 1616.A.115(17)	No Difference		
Chapter 1 Reference Definition	Appropriate ATS authority. The relevant authority designated by the State responsible for providing air traffic services in the airspace concerned.	CV-CAR 1616.A.115(57)	No Difference		
Chapter 1 Reference Definition	Area control centre (ACC). A unit established to provide air traffic control service to controlled flights in control areas under its jurisdiction.	CV-CAR 1616.A.115(18)	No Difference		
Chapter 1 Reference Definition	Area navigation (RNAV). A method of navigation which permits aircraft operations on any desired flight path within the coverage of ground- or space-based navigation aids or within the limits of the capability of self-contained aids, or a combination of these. <i>Note.— Area navigation includes performance-based navigation as well as other operations that do not meet the definition of performance-based navigation.</i>	CV-CAR 1616.A.115(49)	No Difference		



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Chapter 1 Reference Definition	<p>Automatic dependent surveillance — contract (ADS-C). A means by which the terms of an ADS-C agreement will be exchanged between the ground system and the aircraft, via a data link, specifying under what conditions ADS-C reports would be initiated, and what data would be contained in the reports.</p> <p><i>Note.— The abbreviated term “ADS contract” is commonly used to refer to ADS event contract, ADS demand contract, ADS periodic contract or an emergency mode.</i></p>	CV-CAR 1616.A.115(80)	No Difference		
Chapter 1 Reference Definition	<p>Briefing. Oral commentary on existing and/or expected meteorological conditions.</p>	CV-CAR 1616.A.115(37)	No Difference		
Chapter 1 Reference Definition	<p>Cloud of operational significance. A cloud with the height of cloud base below 1 500 m (5 000 ft) or below the highest minimum sector altitude, whichever is greater, or a cumulonimbus cloud or a towering cumulus cloud at any height.</p>	CV-CAR 1616.A.115(53)	No Difference		
Chapter 1 Reference Definition	<p>Consultation. Discussion with a meteorologist or another qualified person of existing and/or expected meteorological conditions relating to flight operations; a discussion includes answers to questions.</p>	CV-CAR 1616.A.115(26)	No Difference		



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Chapter 1 Reference Definition	Control area (CTA). A controlled airspace extending upwards from a specified limit above the earth.	CV-CAR 1616.A.115(12)	No Difference		
Chapter 1 Reference Definition	Cruising level. A level maintained during a significant portion of a flight.	CV-CAR 1616.A.115(51)	No Difference		
Chapter 1 Reference Definition	Elevation. The vertical distance of a point or a level, on or affixed to the surface of the earth, measured from mean sea level.	CV-CAR 1616.A.115(32)	No Difference		
Chapter 1 Reference Definition	Extended range operation. Any flight by an aeroplane with two turbine engines where the flight time at the one engine inoperative cruise speed (in ISA and still air conditions), from a point on the route to an adequate alternate aerodrome, is greater than the threshold time approved by the State of the Operator.	CV-CAR 1616.A.115(88)	No Difference		
Chapter 1 Reference Definition	Flight crew member. A licensed crew member charged with duties essential to the operation of an aircraft during a flight duty period.	CV-CAR 1616.A.115(47)	No Difference		



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Chapter 1 Reference Definition	Flight documentation. Written or printed documents, including charts or forms, containing meteorological information for a flight.	CV-CAR 1616.A.115(31)	No Difference		
Chapter 1 Reference Definition	Flight information centre (FIC). A unit established to provide flight information service and alerting service.	CV-CAR 1616.A.115(19)	No Difference		
Chapter 1 Reference Definition	Flight information region (FIR). An airspace of defined dimensions within which flight information service and alerting service are provided.	CV-CAR 1616.A.115(68)	No Difference		



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Chapter 1 Reference Definition	<p>Flight level. A surface of constant atmospheric pressure which is related to a specific pressure datum, 1 013.2 hectopascals (hPa), and is separated from other such surfaces by specific pressure intervals.</p> <p><i>Note 1.— A pressure type altimeter calibrated in accordance with the Standard Atmosphere:</i></p> <p><i>a) when set to a QNH altimeter setting, will indicate altitude;</i></p> <p><i>b) when set to a QFE altimeter setting, will indicate height above the QFE reference datum;</i></p> <p><i>c) when set to a pressure of 1 013.2 hPa, may be used to indicate flight levels.</i></p> <p><i>Note 2.— The terms “height” and “altitude”, used in Note 1, indicate altimetric rather than geometric heights and altitudes.</i></p>	CV-CAR 1616.A.115(52)	No Difference		
Chapter 1 Reference Definition	<p>Forecast. A statement of expected meteorological conditions for a specified time or period, and for a specified area or portion of airspace.</p>	CV-CAR 1616.A.115(64)	No Difference		
Chapter 1 Reference Definition	<p>GAMET area forecast. An area forecast in abbreviated plain language for low-level flights for a flight information region or sub-area thereof, prepared by the meteorological office designated by the meteorological authority concerned and exchanged with meteorological offices in adjacent flight information regions, as agreed between the meteorological authorities concerned.</p>	CV-CAR 1616.A.115(65)	No Difference		



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Chapter 1 Reference Definition	Grid point data in digital form. Computer processed meteorological data for a set of regularly spaced points on a chart, for transmission from a meteorological computer to another computer in a code form suitable for automated use. <i>Note.— In most cases, such data are transmitted on medium- or high-speed telecommunications channels.</i>	CV-CAR 1616.A.115(30)	No Difference		
Chapter 1 Reference Definition	Height. The vertical distance of a level, a point or an object considered as a point, measured from a specified datum.	CV-CAR 1616.A.115(11)	No Difference		
Chapter 1 Reference Definition	Human Factors principles. Principles which apply to aeronautical design, certification, training, operations and maintenance and which seek safe interface between the human and other system components by proper consideration to human performance.	CV-CAR 1616.A.115(66)	No Difference		
Chapter 1 Reference Definition	ICAO meteorological information exchange model (IWXXM). A data model for representing aeronautical meteorological information.		Not Applicable		



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Chapter 1 Reference Definition	<p>International airways volcano watch (IAVW). International arrangements for monitoring and providing warnings to aircraft of volcanic ash in the atmosphere.</p> <p><i>Note.— The IAVW is based on the cooperation of aviation and non-aviation operational units using information derived from observing sources and networks that are provided by States. The watch is coordinated by ICAO with the cooperation of other concerned international organizations.</i></p>	CV-CAR 1616.A.115(81)	No Difference		
Chapter 1 Reference Definition	<p>Level. A generic term relating to the vertical position of an aircraft in flight and meaning variously height, altitude or flight level.</p>	CV-CAR 1616.A.115(50)	No Difference		
Chapter 1 Reference Definition	<p>Meteorological authority. The authority providing or arranging for the provision of meteorological service for international air navigation on behalf of a Contracting State.</p>	CV-CAR 1616.A.115Preamble	No Difference		
Chapter 1 Reference Definition	<p>Meteorological bulletin. A text comprising meteorological information preceded by an appropriate heading.</p>	CV-CAR 1616.A.115(14)	No Difference		



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Chapter 1 Reference Definition	Meteorological information. Meteorological report, analysis, forecast, and any other statement relating to existing or expected meteorological conditions.	CV-CAR 1616.A.115(42)	No Difference		
Chapter 1 Reference Definition	Meteorological office. An office designated to provide meteorological service for international air navigation.	CV-CAR 1616.A.115(22)	No Difference		
Chapter 1 Reference Definition	Meteorological report. A statement of observed meteorological conditions related to a specified time and location.	CV-CAR 1616.A.115(29)	No Difference		
Chapter 1 Reference Definition	Meteorological satellite. An artificial Earth satellite making meteorological observations and transmitting these observations to Earth.	CV-CAR 1616.A.115(69)	No Difference		
Chapter 1 Reference Definition	Meteorological watch office (MWO). An office designated to provide information concerning the occurrence or expected occurrence of specified en-route weather and other phenomena in the atmosphere that may affect the safety of aircraft operations within its specified area of responsibility.	CV-CAR 1616.A.115(20)	No Difference		



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Chapter 1 Reference Definition	Minimum sector altitude. The lowest altitude which may be used which will provide a minimum clearance of 300 m (1 000 ft) above all objects located in an area contained within a sector of a circle of 46 km (25 NM) radius centred on a radio aid to navigation.	CV-CAR 1616.A.115(10)	No Difference		
Chapter 1 Reference Definition	Navigation specification. A set of aircraft and flight crew requirements needed to support performance-based navigation operations within a defined airspace. There are two kinds of navigation specifications: <i>Required navigation performance (RNP) specification.</i> A navigation specification based on area navigation that includes the requirement for performance monitoring and alerting, designated by the prefix RNP, e.g. RNP 4, RNP APCH. <i>Area navigation (RNAV) specification.</i> A navigation specification based on area navigation that does not include the requirement for performance monitoring and alerting, designated by the prefix RNAV, e.g. RNAV 5, RNAV 1. <i>Note.— The Performance-based Navigation (PBN) Manual (Doc 9613), Volume II, contains detailed guidance on navigation specifications.</i>	CV-CAR 1616.A.115(34)	No Difference		
Chapter 1 Reference Definition	Observation (meteorological). The evaluation of one or more meteorological elements.	CV-CAR 1616.A.115(55)	No Difference		



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Chapter 1 Reference Definition	Operational control. The exercise of authority over the initiation, continuation, diversion or termination of a flight in the interest of the safety of the aircraft and the regularity and efficiency of the flight.	CV-CAR 1616.A.115(28)	No Difference		
Chapter 1 Reference Definition	Operational flight plan. The operator's plan for the safe conduct of the flight based on considerations of aeroplane performance, other operating limitations and relevant expected conditions on the route to be followed and at the aerodromes concerned.	CV-CAR 1616.A.115(61)	No Difference		
Chapter 1 Reference Definition	Operational planning. The planning of flight operations by an operator.	CV-CAR 1616.A.115(60)	No Difference		
Chapter 1 Reference Definition	Operator. The person, organization or enterprise engaged in or offering to engage in an aircraft operation.	CV-CAR 1616.A.115(56)	No Difference		



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Chapter 1 Reference Definition	<p>Performance-based navigation (PBN). Area navigation based on performance requirements for aircraft operating along an ATS route, on an instrument approach procedure or in a designated airspace.</p> <p><i>Note.— Performance requirements are expressed in navigation specification (RNAV specification, RNP specification) in terms of accuracy, integrity, continuity, availability and functionality needed for the proposed operation in the context of a particular airspace concept.</i></p>	CV-CAR 1616.A.115(48)	No Difference		
Chapter 1 Reference Definition	<p>Pilot-in-command. The pilot designated by the operator, or in the case of general aviation, the owner, as being in command and charged with the safe conduct of a flight.</p>	CV-CAR 1616.A.115(58)	No Difference		
Chapter 1 Reference Definition	<p>Prevailing visibility. The greatest visibility value, observed in accordance with the definition of “visibility”, which is reached within at least half the horizon circle or within at least half of the surface of the aerodrome. These areas could comprise contiguous or non-contiguous sectors.</p> <p><i>Note.— This value may be assessed by human observation and/or instrumented systems. When instruments are installed, they are used to obtain the best estimate of the prevailing visibility.</i></p>	CV-CAR 1616.A.115(84)	No Difference		



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Chapter 1 Reference Definition	Prognostic chart. A forecast of a specified meteorological element(s) for a specified time or period and a specified surface or portion of airspace, depicted graphically on a chart.	CV-CAR 1616.A.115(15)	No Difference		
Chapter 1 Reference Definition	Quality assurance. Part of quality management focused on providing confidence that quality requirements will be fulfilled (ISO 9000*). ----- * ISO Standard 9000 — Quality Management Systems — Fundamentals and Vocabulary.	CV-CAR 1616.A.115(38)	No Difference		
Chapter 1 Reference Definition	Quality control. Part of quality management focused on fulfilling quality requirements (ISO 9000*).	CV-CAR 1616.A.115(27)	No Difference		
Chapter 1 Reference Definition	Quality management. Coordinated activities to direct and control an organization with regard to quality (ISO 9000*).	CV-CAR 1616.A.115(39)	No Difference		



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Chapter 1 Reference Definition	Regional air navigation agreement. Agreement approved by the Council of ICAO normally on the advice of a regional air navigation meeting.	CV-CAR 1616.A.115(1)	No Difference		
Chapter 1 Reference Definition	Reporting point. A specified geographical location in relation to which the position of an aircraft can be reported.	CV-CAR 1616.A.115(62)	No Difference		
Chapter 1 Reference Definition	Rescue coordination centre. A unit responsible for promoting efficient organization of search and rescue services and for coordinating the conduct of search and rescue operations within a search and rescue region.	CV-CAR 1616.A.115(21)	No Difference		
Chapter 1 Reference Definition	Runway. A defined rectangular area on a land aerodrome prepared for the landing and take-off of aircraft.	CV-CAR 1616.A.115(59)	No Difference		
Chapter 1 Reference Definition	Runway visual range (RVR). The range over which the pilot of an aircraft on the centre line of a runway can see the runway surface markings or the lights delineating the runway or identifying its centre line.	CV-CAR 1616.A.115(8)	No Difference		



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Chapter 1 Reference Definition	Search and rescue services unit. A generic term meaning, as the case may be, rescue coordination centre, rescue subcentre or alerting post.	CV-CAR 1616.A.115(21)	No Difference		
Chapter 1 Reference Definition	SIGMET information. Information issued by a meteorological watch office concerning the occurrence or expected occurrence of specified en-route weather and other phenomena in the atmosphere that may affect the safety of aircraft operations.	CV-CAR 1616.A.115(44)	No Difference		
Chapter 1 Reference Definition	Space weather centre (SWXC). A centre designated to monitor and provide advisory information on space weather phenomena expected to affect high-frequency radio communications, communications via satellite, GNSS-based navigation and surveillance systems and/or pose a radiation risk to aircraft occupants. <i>Note.— A space weather centre is designated as global and/or regional.</i>		Not Applicable		Not used in Cabo verde
Chapter 1 Reference Definition	Standard isobaric surface. An isobaric surface used on a worldwide basis for representing and analysing the conditions in the atmosphere.	CV-CAR 1616.A.115(77)	No Difference		



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Chapter 1 Reference Definition	State volcano observatory. A volcano observatory, designated by regional air navigation agreement, to monitor active or potentially active volcanoes within a State and to provide information on volcanic activity to its associated area control centre/flight information centre, meteorological watch office and volcanic ash advisory centre.	CV-CAR 1616.A.115(55)	No Difference		
Chapter 1 Reference Definition	Threshold. The beginning of that portion of the runway usable for landing.	CV-CAR 1616.A.115(75)	No Difference		
Chapter 1 Reference Definition	Touchdown zone. The portion of a runway, beyond the threshold, where it is intended landing aeroplanes first contact the runway.	CV-CAR 1616.A.115(89)	No Difference		
Chapter 1 Reference Definition	Tropical cyclone. Generic term for a non-frontal synoptic-scale cyclone originating over tropical or sub-tropical waters with organized convection and definite cyclonic surface wind circulation.	CV-CAR 1616.A.115(25)	No Difference		



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Chapter 1 Reference Definition	Tropical cyclone advisory centre (TCAC). A meteorological centre designated by regional air navigation agreement to provide advisory information to meteorological watch offices, world area forecast centres and international OPMET databanks regarding the position, forecast direction and speed of movement, central pressure and maximum surface wind of tropical cyclones.	CV-CAR 1616.A.115(20)	No Difference		
Chapter 1 Reference Definition	Upper-air chart. A meteorological chart relating to a specified upper-air surface or layer of the atmosphere.	CV-CAR 1616.A.115(16)	No Difference		
Chapter 1 Reference Definition	Visibility. Visibility for aeronautical purposes is the greater of: a) the greatest distance at which a black object of suitable dimensions, situated near the ground, can be seen and recognized when observed against a bright background; b) the greatest distance at which lights in the vicinity of 1 000 candelas can be seen and identified against an unlit background. <i>Note.— The two distances have different values in air of a given extinction coefficient, and the latter b) varies with the background illumination. The former a) is represented by the meteorological optical range (MOR).</i>	CV-CAR 1616.A.115(83)	No Difference		



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Chapter 1 Reference Definition	<i>Volcanic ash advisory centre (VAAC)</i> . A meteorological centre designated by regional air navigation agreement to provide advisory information to meteorological watch offices, area control centres, flight information centres, world area forecast centres and international OPMET databanks regarding the lateral and vertical extent and forecast movement of volcanic ash in the atmosphere following volcanic eruptions.	CV-CAR 1616.A.115(16)	No Difference		
Chapter 1 Reference Definition	<i>VOLMET</i> . Meteorological information for aircraft in flight. <i>Data link-VOLMET (D-VOLMET)</i> . Provision of current aerodrome routine meteorological reports (METAR) and aerodrome special meteorological reports (SPECI), aerodrome forecasts (TAF), SIGMET, special air-reports not covered by a SIGMET and, where available, AIRMET via data link. <i>VOLMET broadcast</i> . Provision, as appropriate, of current METAR, SPECI, TAF and SIGMET by means of continuous and repetitive voice broadcasts.	CV-CAR 1616.A.115(85),(86),(87)	No Difference		
Chapter 1 Reference Definition	<i>World area forecast centre (WAFIC)</i> . A meteorological centre designated to prepare and issue significant weather forecasts and upper-air forecasts in digital form on a global basis direct to States using the aeronautical fixed service Internet-based services.	CV-CAR 1616.A.115(24)	No Difference		



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Chapter 1 Reference Definition	<i>World area forecast system (WAFS)</i> . A worldwide system by which world area forecast centres provide aeronautical meteorological en-route forecasts in uniform standardized formats.	CV-CAR 1616.A.115(74)	No Difference		
Chapter 1 Reference 1.2 Standard	<p style="text-align: center;">1.2 Terms used with a limited meaning</p> <p>For the purpose of this Annex, the following terms are used with a limited meaning as indicated below:</p> <ul style="list-style-type: none"> a) to avoid confusion in respect of the term “service” between the meteorological service considered as an administrative entity and the service which is provided, “meteorological authority” is used for the former and “service” for the latter; b) “provide” is used solely in connection with the provision of service; c) “issue” is used solely in connection with cases where the obligation specifically extends to sending out the information to a user; d) “make available” is used solely in connection with cases where the obligation ends with making the information accessible to a user; and e) “supply” is used solely in connection with cases where either c) or d) applies. 	CV-CAR 1616.A.115Note	No Difference		



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Chapter 2 Reference 2.1.1 Standard	<p style="text-align: center;">CHAPTER 2. GENERAL PROVISIONS</p> <p><i>Introductory Note 1.— It is recognized that the provisions of this Annex with respect to meteorological information are subject to the understanding that the obligation of a Contracting State is for the supply, under Article 28 of the Convention on International Civil Aviation, of meteorological information and that the responsibility for the use made of such information is that of the user.</i></p> <p><i>Introductory Note 2.— Although the Convention allocates to the State of Registry certain functions which that State is entitled to discharge, or obligated to discharge, as the case may be, the Assembly recognized, in Resolution A23-13, that the State of Registry may be unable to fulfil its responsibilities adequately in instances where aircraft are leased, chartered or interchanged — in particular without crew — by an operator of another State and that the Convention may not adequately specify the rights and obligations of the State of an operator in such instances until such time as Article 83 bis of the Convention enters into force. Accordingly, the Council urged that if, in the above-mentioned instances, the State of Registry finds itself unable to discharge adequately the functions allocated to it by the Convention, it delegate to the State of the Operator, subject to acceptance by the latter State, those functions of the State of Registry that can more adequately be discharged by the State of the Operator. It was understood that pending entry into force of Article 83 bis of the Convention the foregoing action would only be a matter of practical convenience and would not affect either the provisions of the Convention prescribing the duties of the State of Registry or any third State. However, as Article 83 bis of the Convention</i></p>	CV-CAR 1616.B.100CV-CAR 1616.B.105(a)	No Difference		



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	<p><i>entered into force on 20 June 1997, such transfer agreements will have effect in respect of Contracting States that have ratified the related Protocol (Doc 9318) upon fulfilment of the conditions established in Article 83 bis.</i></p> <p><i>Introductory Note 3.— In the case of international operations effected jointly with aeroplanes not all of which are registered in the same Contracting State, nothing in this Annex prevents the States concerned entering into an agreement for the joint exercise of the functions placed upon the State of Registry by the provisions of this Annex.</i></p> <p>2.1 Objective, determination and provision of meteorological service</p> <p>2.1.1 The objective of meteorological service for international air navigation shall be to contribute towards the safety, regularity and efficiency of international air navigation.</p>				
Chapter 2 Reference 2.1.2 Standard	2.1.2 This objective shall be achieved by supplying the following users: operators, flight crew members, air traffic services units, search and rescue services units, airport managements and others concerned with the conduct or development of international air navigation, with the meteorological information necessary for the performance of their respective functions.	CV-CAR 1616.B.105(b)	No Difference		



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Chapter 2 Reference 2.1.3 Standard	2.1.3 Each Contracting State shall determine the meteorological service which it will provide to meet the needs of international air navigation. This determination shall be made in accordance with the provisions of this Annex and in accordance with regional air navigation agreement; it shall include the determination of the meteorological service to be provided for international air navigation over international waters and other areas which lie outside the territory of the State concerned.	CV-CAR 1616.B.105(c) e (d)	No Difference		
Chapter 2 Reference 2.1.4 Standard	2.1.4 Each Contracting State shall designate the authority, hereinafter referred to as the meteorological authority, to provide or to arrange for the provision of meteorological service for international air navigation on its behalf. Details of the meteorological authority so designated shall be included in the State aeronautical information publication, in accordance with Annex 15, Chapter 5. <i>Note.— Detailed specifications concerning presentation and contents of the aeronautical information publication is provided in the Procedures for Air Navigation Services — Aeronautical Information Management (PANS-AIM, Doc 10066), Appendix 2.</i>	CV-CAR 16Preamble(parageaph 1)	No Difference		



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Chapter 2 Reference 2.1.5 Standard	<p>2.1.5 Each Contracting State shall ensure that the designated meteorological authority complies with the requirements of the World Meteorological Organization (WMO) in respect of qualifications, competencies, education and training of meteorological personnel providing service for international air navigation.</p> <p><i>Note.— Requirements concerning the qualifications, competencies, education and training of meteorological personnel in aeronautical meteorology are given in the Technical Regulations (WMO-No. 49), Volume I — General Meteorological Standards and Recommended Practices, Part V — Qualifications and Competencies of Personnel Involved in the Provision of Meteorological (Weather and Climate) and Hydrological Services, Part VI — Education and Training of Meteorological Personnel, and Appendix A — Basic Instruction Packages.</i></p>	CV-CAR 1616.C.210(b)	No Difference		
Chapter 2 Reference 2.2.1 Standard	<p>2.2 Supply, use, quality management and interpretation of meteorological information</p> <p>2.2.1 Close liaison shall be maintained between those concerned with the supply and those concerned with the use of meteorological information on matters which affect the provision of meteorological service for international air navigation.</p>	CV-CAR 1616.B.110(a)	No Difference		



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Chapter 2 Reference 2.2.2 Standard	2.2.2 Each Contracting State shall ensure that the designated meteorological authority referred to in 2.1.4 establishes and implements a properly organized quality system comprising procedures, processes and resources necessary to provide for the quality management of the meteorological information to be supplied to the users listed in 2.1.2.	CV-CAR 1616.B.110(b)	No Difference		
Chapter 2 Reference 2.2.3 Recommendation	2.2.3 Recommendation. — <i>The quality system established in accordance with 2.2.2 should be in conformity with the International Organization for Standardization (ISO) 9000 series of quality assurance standards and should be certified by an approved organization.</i> <i>Note.</i> — <i>The ISO 9000 series of quality assurance standards provide a basic framework for the development of a quality assurance programme. The details of a successful programme are to be formulated by each State and in most cases are unique to the State organization. Guidance on the establishment and implementation of a quality system is given in the Manual on the Quality Management System for the Provision of Meteorological Service for International Air Navigation (Doc 9873).</i>	CV-CAR 1616.B.110(b)	No Difference		



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Chapter 2 Reference 2.2.4 Recommendation	<p>2.2.4 Recommendation.— <i>The quality system should provide the users with assurance that the meteorological information supplied complies with the stated requirements in terms of the geographical and spatial coverage, format and content, time and frequency of issuance and period of validity, as well as the accuracy of measurements, observations and forecasts. When the quality system indicates that meteorological information to be supplied to the users does not comply with the stated requirements, and automatic error correction procedures are not appropriate, such information should not be supplied to the users unless it is validated with the originator.</i></p> <p><i>Note.</i>— <i>Requirements concerning the geographical and spatial coverage, format and content, time and frequency of issuance and period of validity of meteorological information to be supplied to aeronautical users are given in Chapters 3, 4, 6, 7, 8, 9 and 10 and Appendices 2, 3, 5, 6, 7, 8 and 9 of this Annex and the relevant regional air navigation plans. Guidance concerning the accuracy of measurement and observation, and accuracy of forecasts is given in Attachments A and B, respectively, to this Annex.</i></p>	CV-CAR 1616.B.110(c) e (d)	No Difference		
Chapter 2 Reference 2.2.5 Recommendation	<p>2.2.5 Recommendation.— <i>In regard to the exchange of meteorological information for operational purposes, the quality system should include verification and validation procedures and resources for monitoring adherence to the prescribed transmission schedules for individual messages and/or bulletins required to be exchanged, and the times of their filing for transmission. The quality system should be capable of detecting excessive transit times of messages and bulletins received.</i></p> <p><i>Note.</i>— <i>Requirements concerning the exchange of operational meteorological information are given in Chapter 11 and Appendix 10 of this Annex.</i></p>	CV-CAR 1616.B.110(e) e (f)	No Difference		



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Chapter 2 Reference 2.2.6 Standard	2.2.6 Demonstration of compliance of the quality system applied shall be by audit. If non-conformity of the system is identified, action shall be initiated to determine and correct the cause. All audit observations shall be evidenced and properly documented.	CV-CAR 1616.B.110(g),(h),(i)	No Difference		
Chapter 2 Reference 2.2.7 Standard	2.2.7 Owing to the variability of meteorological elements in space and time, to limitations of observing techniques and to limitations caused by the definitions of some of the elements, the specific value of any of the elements given in a report shall be understood by the recipient to be the best approximation of the actual conditions at the time of observation. <i>Note.— Guidance on the operationally desirable accuracy of measurement or observation is given in Attachment A.</i>	CV-CAR 1616.B.110(j)	No Difference		
Chapter 2 Reference 2.2.8 Standard	2.2.8 Owing to the variability of meteorological elements in space and time, to limitations of forecasting techniques and to limitations caused by the definitions of some of the elements, the specific value of any of the elements given in a forecast shall be understood by the recipient to be the most probable value which the element is likely to assume during the period of the forecast. Similarly, when the time of occurrence or change of an element is given in a forecast, this time shall be understood to be the most probable time. <i>Note.— Guidance on the operationally desirable accuracy of forecasts is given in Attachment B.</i>	CV-CAR 1616.B.110(k)	No Difference		



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Chapter 2 Reference 2.2.9 Standard	<p>2.2.9 The meteorological information supplied to the users listed in 2.1.2 shall be consistent with Human Factors principles and shall be in forms which require a minimum of interpretation by these users, as specified in the following chapters.</p> <p><i>Note.— Guidance material on the application of Human Factors principles can be found in the Human Factors Training Manual (Doc 9683).</i></p>	CV-CAR 1616.B.110(m)	No Difference		
Chapter 2 Reference 2.3.1 Standard	<p>2.3 Notifications required from operators</p> <p>2.3.1 An operator requiring meteorological service or changes in existing meteorological service shall notify, sufficiently in advance, the meteorological authority or the aerodrome meteorological office concerned. The minimum amount of advance notice required shall be as agreed between the meteorological authority or aerodrome meteorological office and the operator concerned.</p>	CV-CAR 1616.B.115(a) e (b)	No Difference		



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Chapter 2 Reference 2.3.2 Standard	<p>2.3.2 The meteorological authority shall be notified by the operator requiring service when:</p> <ul style="list-style-type: none"> a) new routes or new types of operations are planned; b) changes of a lasting character are to be made in scheduled operations; and c) other changes, affecting the provision of meteorological service, are planned. <p>Such information shall contain all details necessary for the planning of appropriate arrangements by the meteorological authority.</p>	CV-CAR 1616.B.115(c) e (d)	No Difference		
Chapter 2 Reference 2.3.3 Standard	<p>2.3.3 The operator or a flight crew member shall ensure that, where required by the meteorological authority in consultation with users, the aerodrome meteorological office concerned is notified:</p> <ul style="list-style-type: none"> a) of flight schedules; b) when non-scheduled flights are to be operated; and c) when flights are delayed, advanced or cancelled. 	CV-CAR 1616.B.115(e)	No Difference		



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Chapter 2 Reference 2.3.4 Recommendation	<p>2.3.4 Recommendation.— <i>The notification to the aerodrome meteorological office of individual flights should contain the following information except that, in the case of scheduled flights, the requirement for some or all of this information may be waived as agreed between the aerodrome meteorological office and the operator concerned:</i></p> <ul style="list-style-type: none"> <i>a) aerodrome of departure and estimated time of departure;</i> <i>b) destination and estimated time of arrival;</i> <i>c) route to be flown and estimated times of arrival at, and departure from, any intermediate aerodrome(s);</i> <i>d) alternate aerodromes needed to complete the operational flight plan and taken from the relevant list contained in the regional air navigation plan;</i> <i>e) cruising level;</i> <i>f) type of flight, whether under visual or instrument flight rules;</i> <i>g) type of meteorological information requested for a flight crew member, whether flight documentation and/or briefing or consultation; and</i> <i>h) time(s) at which briefing, consultation and/or flight documentation are required.</i> 	CV-CAR 1616.B.115(f) e (g)	No Difference		



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Chapter 3 Reference 3.1 Standard	<p style="text-align: center;">CHAPTER 3. GLOBAL SYSTEMS, SUPPORTING CENTRES AND METEOROLOGICAL OFFICES</p> <p style="text-align: center;"><i>Note.— Technical specifications and detailed criteria related to this chapter are given in Appendix 2.</i></p> <p style="text-align: center;">3.1 World area forecast system</p> <p>The objective of the world area forecast system (WAFS) shall be to supply meteorological authorities and other users with global aeronautical meteorological en-route forecasts in digital form. This objective shall be achieved through a comprehensive, integrated, worldwide and, as far as practicable, uniform system, and in a cost-effective manner, taking full advantage of evolving technologies.</p>	CV-CAR 1616.E.100CV-CAR 1616.E.105(a) e (b)	No Difference		



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Chapter 3 Reference 3.2.1 Standard	<p style="text-align: center;">3.2 World area forecast centres</p> <p>3.2.1 A Contracting State, having accepted the responsibility for providing a world area forecast centre (WAFS) within the framework of the WAFS, shall arrange for that centre:</p> <ul style="list-style-type: none"> a) to prepare gridded global forecasts of: <ul style="list-style-type: none"> 1) upper wind; 2) upper-air temperature and humidity; 3) geopotential altitude of flight levels; 4) flight level and temperature of tropopause; 5) direction, speed and flight level of maximum wind; 6) cumulonimbus clouds; 7) icing; and 8) turbulence; b) to prepare global forecasts of significant weather (SIGWX) phenomena; c) to issue the forecasts referred to in a) and b) in digital form to meteorological authorities and other users, as approved by the Contracting State on advice from the meteorological authority; d) to receive information concerning the release of radioactive materials into the atmosphere from its associated World Meteorological Organization (WMO) regional specialized meteorological centre 		Not Applicable		Not used in Cabo verde



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	<p>(RSMC) for the provision of transport model products for radiological environmental emergency response, in order to include the information in SIGWX forecasts; and</p> <p>e) to establish and maintain contact with volcanic ash advisory centres (VAACs) for the exchange of information on volcanic activity in order to coordinate the inclusion of information on volcanic eruptions in SIGWX forecasts.</p>				
<p>Chapter 3 Reference 3.2.2</p> <p>Standard</p>	<p>3.2.2 In case of interruption of the operation of a WAFC, its functions shall be carried out by the other WAFC.</p> <p><i>Note.— Back-up procedures to be used in case of interruption of the operation of a WAFC are updated by the Meteorology Panel (METP) as necessary; the latest revision can be found on the ICAO METP website.</i></p>		Not Applicable		Not used in Cabo verde
<p>Chapter 3 Reference 3.3.1</p> <p>Standard</p>	<p>3.3 Aerodrome meteorological offices</p> <p>3.3.1 Each Contracting State shall establish one or more aerodrome and/or other meteorological offices which shall be adequate for the provision of the meteorological service required to satisfy the needs of international air navigation.</p>	CV-CAR 1616.E.110(a)	No Difference		



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Chapter 3 Reference 3.3.2 Standard	<p>3.3.2 An aerodrome meteorological office shall carry out all or some of the following functions as necessary to meet the needs of flight operations at the aerodrome:</p> <ul style="list-style-type: none"> a) prepare and/or obtain forecasts and other relevant information for flights with which it is concerned; the extent of its responsibilities to prepare forecasts shall be related to the local availability and use of en-route and aerodrome forecast material received from other offices; b) prepare and/or obtain forecasts of local meteorological conditions; c) maintain a continuous survey of meteorological conditions over the aerodromes for which it is designated to prepare forecasts; d) provide briefing, consultation and flight documentation to flight crew members and/or other flight operations personnel; e) supply other meteorological information to aeronautical users; f) display the available meteorological information; g) exchange meteorological information with other aerodrome meteorological offices; and h) supply information received on pre-eruption volcanic activity, a volcanic eruption or volcanic ash cloud, to its associated air traffic services unit, aeronautical information service unit and meteorological watch office (MWO) as agreed between the meteorological, aeronautical information service and ATS authorities concerned. 	CV-CAR 1616.E.105(b)	No Difference		



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Chapter 3 Reference 3.3.3 Standard	3.3.3 The aerodromes for which landing forecasts are required shall be determined by regional air navigation agreement.	CV-CAR 1616.E.110(c)	No Difference		
Chapter 3 Reference 3.3.4 Standard	3.3.4 For an aerodrome without an aerodrome meteorological office located at the aerodrome: a) the meteorological authority concerned shall designate one or more aerodrome meteorological office(s) to supply meteorological information as required; and b) the competent authorities shall establish means by which such information can be supplied to the aerodromes concerned.	CV-CAR 1616.E.110(d)	No Difference		



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Chapter 3 Reference 3.4.1 Standard	<p style="text-align: center;">3.4 Meteorological watch offices</p> <p>3.4.1 A Contracting State, having accepted the responsibility for providing air traffic services within a flight information region (FIR) or a control area (CTA), shall establish, in accordance with regional air navigation agreement, one or more MWOs, or arrange for another Contracting State to do so.</p> <p><i>Note.— Guidance on the bilateral or multilateral arrangements between Contracting States for the provision of MWO services, including for cooperation and delegation, can be found in the Manual of Aeronautical Meteorological Practice (Doc 8896).</i></p>	CV-CAR 1616.E.140(a)	No Difference		



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Chapter 3 Reference 3.4.2 Standard	3.4.2 An MWO shall: <ul style="list-style-type: none"> a) maintain continuous watch over meteorological conditions affecting flight operations within its area of responsibility; b) prepare SIGMET and other information relating to its area of responsibility; c) supply SIGMET information and, as required, other meteorological information to associated air traffic services units; d) disseminate SIGMET information; e) when required by regional air navigation agreement, in accordance with 7.2.1: <ul style="list-style-type: none"> 1) prepare AIRMET information related to its area of responsibility; 2) supply AIRMET information to associated air traffic services units; and 3) disseminate AIRMET information; f) supply information received on pre-eruption volcanic activity, a volcanic eruption and volcanic ash cloud for which a SIGMET has not already been issued, to its associated area control centre (ACC)/flight information centre (FIC), as agreed between the meteorological and ATS authorities concerned, and to its associated VAAC as determined by regional air navigation agreement; and g) supply information received concerning the release of radioactive materials into the atmosphere, in the 	CV-CAR 1616.E.140(b)	No Difference		



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	<p>area for which it maintains watch or adjacent areas, to its associated ACC/FIC, as agreed between the meteorological and ATS authorities concerned, and to aeronautical information service units, as agreed between the meteorological and appropriate civil aviation authorities concerned. The information shall comprise location, date and time of the release, and forecast trajectories of the radioactive materials.</p> <p><i>Note.— The information is provided by RSMCs for the provision of transport model products for radiological environmental emergency response, at the request of the delegated authority of the State in which the radioactive material was released into the atmosphere, or the International Atomic Energy Agency (IAEA). The information is sent by the RSMC to a single contact point of the national meteorological service in each State. This contact point has the responsibility of redistributing the RSMC products within the State concerned. Furthermore, the information is provided by IAEA to RSMC co-located with VAAC London (designated as the focal point) which in turn notifies the ACCs/FICs concerned about the release.</i></p>				
Chapter 3 Reference 3.4.3 Recommendation	<p>3.4.3 Recommendation.— <i>The boundaries of the area over which meteorological watch is to be maintained by an MWO should be coincident with the boundaries of an FIR or a CTA or a combination of FIRs and/or CTAs.</i></p>	CV-CAR 1616.B.105(d)	No Difference		



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<p>Chapter 3 Reference 3.5.1 Standard</p>	<p style="text-align: center;">3.5 Volcanic ash advisory centres</p> <p>3.5.1 A Contracting State, having accepted the responsibility for providing a VAAC within the framework of the international airways volcano watch, shall arrange for that centre to respond to a notification that a volcano has erupted or is expected to erupt, or that volcanic ash is reported in its area of responsibility, by:</p> <p>a) monitoring relevant geostationary and polar-orbiting satellite data and, where available, relevant ground-based and airborne data, to detect the existence and extent of volcanic ash in the atmosphere in the area concerned;</p> <p style="text-align: center;"><i>Note.— Relevant ground-based and airborne data include data derived from Doppler weather radar, ceilometers, lidar and passive infrared sensors.</i></p> <p>b) activating the volcanic ash numerical trajectory/dispersion model in order to forecast the movement of any ash “cloud” which has been detected or reported;</p> <p style="text-align: center;"><i>Note.— The numerical model may be its own or, by agreement, that of another VAAC.</i></p> <p>c) issuing advisory information regarding the extent and forecast movement of the volcanic ash “cloud” to:</p> <p>1) MWOs, ACCs and FICs serving FIRs in its area of responsibility which may be affected;</p> <p>2) other VAACs whose areas of responsibility may be affected;</p>	<p>CV-CAR 1616.B.145(a) e (b)</p>	<p>No Difference</p>		



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	<p>3) WAFCS, international OPMET databanks, international NOTAM offices, and centres designated by regional air navigation agreement for the operation of aeronautical fixed service Internet-based services; and</p> <p>4) operators requiring the advisory information through the AFTN address provided specifically for this purpose; and</p> <p><i>Note.— The AFTN address to be used by the VAACs is given in the Handbook on the International Airways Volcano Watch (IAVW) — Operational Procedures and Contact List (Doc 9766) which is available on the ICAO website.</i></p> <p>d) issuing updated advisory information to the MWOs, ACCs, FICs and VAACs referred to in c), as necessary, but at least every six hours until such time as:</p> <p>1) the volcanic ash “cloud” is no longer identifiable from satellite data and, where available, ground-based and airborne data;</p> <p>2) no further reports of volcanic ash are received from the area; and</p> <p>3) no further eruptions of the volcano are reported.</p>				
Chapter 3 Reference 3.5.2 Standard	3.5.2 VAACs shall maintain a 24-hour watch.	CV-CAR 1616.E.145(c)	No Difference		



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Chapter 3 Reference 3.5.3 Standard	<p>3.5.3 In case of interruption of the operation of a VAAC, its functions shall be carried out by another VAAC or another meteorological centre, as designated by the VAAC Provider State concerned.</p> <p><i>Note.— Back-up procedures to be used in case of interruption of the operation of a VAAC are included in Doc 9766.</i></p>	CV-CAR 1616.E.105(d)	No Difference		



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<p>Chapter 3 Reference 3.6 Standard</p>	<p>3.6 State volcano observatories</p> <p>Contracting States with active or potentially active volcanoes shall arrange that State volcano observatories monitor these volcanoes and when observing:</p> <ul style="list-style-type: none"> a) significant pre-eruption volcanic activity, or a cessation thereof; b) a volcanic eruption, or a cessation thereof; and/or c) volcanic ash in the atmosphere <p>shall send this information as quickly as practicable to their associated ACC/FIC, MWO and VAAC.</p> <p><i>Note 1.— Pre-eruption volcanic activity in this context means unusual and/or increasing volcanic activity which could presage a volcanic eruption.</i></p> <p><i>Note 2.— Doc 9766 contains guidance material about active or potentially active volcanoes.</i></p>	<p>CV-CAR 1616.E.150</p>	<p>No Difference</p>		



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Chapter 3 Reference 3.7 Standard	<p style="text-align: center;">3.7 Tropical cyclone advisory centres</p> <p>A Contracting State having accepted the responsibility for providing a tropical cyclone advisory centre (TCAC) shall arrange for that centre to:</p> <ul style="list-style-type: none"> a) monitor the development of tropical cyclones in its area of responsibility, using geostationary and polar-orbiting satellite data, radar data and other meteorological information; b) issue advisory information concerning the position of the cyclone centre, its direction and speed of movement, central pressure and maximum surface wind near the centre, in abbreviated plain language to: <ul style="list-style-type: none"> 1) MWOs in its area of responsibility; 2) other TCACs whose areas of responsibility may be affected; and 3) WAFCs, international OPMET databanks, and centres designated by regional air navigation agreement for the operation of aeronautical fixed service Internet-based services; and c) issue updated advisory information to MWOs for each tropical cyclone, as necessary, but at least every six hours. 	CV-CAR 1616.E.155(a)	No Difference		



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Chapter 3 Reference 3.8.1 Standard	<p style="text-align: center;">3.8 Space weather centres</p> <p>3.8.1 A Contracting State, having accepted the responsibility for providing a space weather centre (SWXC), shall arrange for that centre to monitor and provide advisory information on space weather phenomena in its area of responsibility by arranging for that centre to:</p> <p>a) monitor relevant ground-based, airborne and space-based observations to detect, and predict when possible, the existence of space weather phenomena that have an impact in the following areas:</p> <ol style="list-style-type: none"> 1) high frequency (HF) radio communications; 2) communications via satellite; 3) GNSS-based navigation and surveillance; and 4) radiation exposure at flight levels; <p>b) issue advisory information regarding the extent, severity and duration of the space weather phenomena that have an impact referred to in a);</p> <p>c) supply the advisory information referred to in b) to:</p> <ol style="list-style-type: none"> 1) area control centres, flight information centres and aerodrome meteorological offices in its area of responsibility which may be affected; 2) other SWXCs; and 3) international OPMET databanks, international NOTAM offices and aeronautical fixed service Internet-based services. 		Not Applicable		Not used in Cabo verde



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Chapter 3 Reference 3.8.2 Standard	3.8.2 SWXC shall maintain a 24-hour watch.		Not Applicable		Not used in Cabo verde
Chapter 3 Reference 3.8.3 Standard	3.8.3 In case of interruption of the operation of a SWXC, its functions shall be carried out by another SWXC or another centre, as designated by the SWXC Provider State concerned. <i>Note.— Guidance on the provision of space weather advisory information, including the ICAO-designated provider(s) of space weather advisory information, is provided in the Manual on Space Weather Information in Support of International Air Navigation (Doc 10100).</i>		Not Applicable		Not used in Cabo verde



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Chapter 4 Reference 4.1.1 Standard	<p style="text-align: center;">CHAPTER 4. METEOROLOGICAL OBSERVATIONS AND REPORTS</p> <p><i>Note.— Technical specifications and detailed criteria related to this chapter are given in Appendix 3.</i></p> <p>4.1 Aeronautical meteorological stations and observations</p> <p>4.1.1 Each Contracting State shall establish, at aerodromes in its territory, such aeronautical meteorological stations as it determines to be necessary. An aeronautical meteorological station may be a separate station or may be combined with a synoptic station.</p> <p><i>Note.— Aeronautical meteorological stations may include sensors installed outside the aerodrome, where considered justified, by the meteorological authority to ensure the compliance of meteorological service for international air navigation with the provisions of this Annex.</i></p>	CV-CAR 1616.E.200CV-CAR 1616.E.205(a) e (b)	No Difference		
Chapter 4 Reference 4.1.2 Recommendation	<p>4.1.2 Recommendation.— <i>Each Contracting State should establish, or arrange for the establishment of, aeronautical meteorological stations on offshore structures or at other points of significance in support of helicopter operations to offshore structures, if required by regional air navigation agreement.</i></p>		Not Applicable		Not used in Cabo verde



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Chapter 4 Reference 4.1.3 Standard	4.1.3 Aeronautical meteorological stations shall make routine observations at fixed intervals. At aerodromes, the routine observations shall be supplemented by special observations whenever specified changes occur in respect of surface wind, visibility, runway visual range, present weather, clouds and/or air temperature.	CV-CAR 1616.E.205(c) e (d)	No Difference		
Chapter 4 Reference 4.1.4 Standard	4.1.4 Each Contracting State shall arrange for its aeronautical meteorological stations to be inspected at sufficiently frequent intervals to ensure that a high standard of observation is maintained, that instruments and all their indicators are functioning correctly, and that the exposure of the instruments has not changed significantly. <i>Note.— Guidance on the inspection of aeronautical meteorological stations including the frequency of inspections is given in the Manual on Automatic Meteorological Observing Systems at Aerodromes (Doc 9837).</i>	CV-CAR 1616.E.205(e)	No Difference		



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Chapter 4 Reference 4.1.5 Standard	<p>4.1.5 At aerodromes with runways intended for Category II and III instrument approach and landing operations, automated equipment for measuring or assessing, as appropriate, and for monitoring and remote indicating of surface wind, visibility, runway visual range, height of cloud base, air and dew-point temperatures and atmospheric pressure shall be installed to support approach and landing and take-off operations. These devices shall be integrated automatic systems for acquisition, processing, dissemination and display in real time of the meteorological parameters affecting landing and take-off operations. The design of integrated automatic systems shall observe Human Factors principles and include back-up procedures.</p> <p><i>Note 1.— Categories of precision approach and landing operations are defined in Annex 6, Part I.</i></p> <p><i>Note 2.— Guidance material on the application of Human Factors principles can be found in the Human Factors Training Manual (Doc 9683).</i></p>	CV-CAR 1616.E.205(f),(g),(h)	No Difference		
Chapter 4 Reference 4.1.6 Recommendation	<p>4.1.6 Recommendation.— <i>At aerodromes with runways intended for Category I instrument approach and landing operations, automated equipment for measuring or assessing, as appropriate, and for monitoring and remote indicating of surface wind, visibility, runway visual range, height of cloud base, air and dew-point temperatures and atmospheric pressure should be installed to support approach and landing and take-off operations. These devices should be integrated automatic systems for acquisition, processing, dissemination and display in real time of the meteorological parameters affecting landing and take-off operations. The design of integrated automatic systems should observe Human Factors principles and include back-up procedures.</i></p>	CV-CAR 1616.E.205(i),(j),(k)	No Difference		



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Chapter 4 Reference 4.1.7 Recommendation	4.1.7 Recommendation. — <i>Where an integrated semi-automatic system is used for the dissemination/display of meteorological information, it should be capable of accepting the manual insertion of data covering those meteorological elements which cannot be observed by automatic means.</i>	CV-CAR 1616.E.205(l)	No Difference		
Chapter 4 Reference 4.1.8 Standard	4.1.8 The observations shall form the basis for the preparation of reports to be disseminated at the aerodrome of origin and of reports to be disseminated beyond the aerodrome of origin.	CV-CAR 1616.E.205(m)	No Difference		



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Chapter 4 Reference 4.2.0.1 Recommendation	<p>4.2 Agreement between meteorological authorities and air traffic services authorities</p> <p>Recommendation.— <i>An agreement between the meteorological authority and the appropriate ATS authority should be established to cover, among other things:</i></p> <ul style="list-style-type: none"> <i>a) the provision in air traffic services units of displays related to integrated automatic systems;</i> <i>b) the calibration and maintenance of these displays/instruments;</i> <i>c) the use to be made of these displays/instruments by air traffic services personnel;</i> <i>d) as and where necessary, supplementary visual observations (for example, of meteorological phenomena of operational significance in the climb-out and approach areas) if and when made by air traffic services personnel to update or supplement the information supplied by the meteorological station;</i> <i>e) meteorological information obtained from aircraft taking off or landing (for example, on wind shear); and</i> <i>f) if available, meteorological information obtained from ground weather radar.</i> <p><i>Note.</i>— <i>Guidance on the subject of coordination between ATS and aeronautical meteorological services is contained in the Manual on Coordination between Air Traffic Services, Aeronautical Information Services and Aeronautical Meteorological Services (Doc 9377).</i></p>	CV-CAR 1616.E.210	No Difference		



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Chapter 4 Reference 4.3.1 Standard	<p align="center">4.3 Routine observations and reports</p> <p>4.3.1 At aerodromes, routine observations shall be made throughout the 24 hours of each day, unless otherwise agreed between the meteorological authority, the appropriate ATS authority and the operator concerned. Such observations shall be made at intervals of one hour or, if so determined by regional air navigation agreement, at intervals of one half-hour. At other aeronautical meteorological stations, such observations shall be made as determined by the meteorological authority taking into account the requirements of air traffic services units and aircraft operations.</p>	CV-CAR 1616.E.215(a),(b) (Paragraph 3N/A)	No Difference		
Chapter 4 Reference 4.3.2 Standard	<p>4.3.2 Reports of routine observations shall be issued as:</p> <p>a) local routine reports, only for dissemination at the aerodrome of origin (intended for arriving and departing aircraft); and</p> <p>b) METAR for dissemination beyond the aerodrome of origin (mainly intended for flight planning, VOLMET broadcasts and D-VOLMET).</p> <p><i>Note.— Meteorological information used in ATIS (voice-ATIS and D-ATIS) is to be extracted from the local routine report, in accordance with Annex 11, 4.3.6.1 g).</i></p>	CV-CAR 1616.E.215(d)	No Difference		
Chapter 4 Reference 4.3.3 Standard	<p>4.3.3 At aerodromes that are not operational throughout 24 hours in accordance with 4.3.1, METAR shall be issued prior to the aerodrome resuming operations in accordance with regional air navigation agreement.</p>	CV-CAR 1616.E.215(e)	No Difference		



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Chapter 4 Reference 4.4.1 Standard	<p style="text-align: center;">4.4 Special observations and reports</p> <p>4.4.1 A list of criteria for special observations shall be established by the meteorological authority, in consultation with the appropriate ATS authority, operators and others concerned.</p>	CV-CAR 1616.E.220(a)	No Difference		
Chapter 4 Reference 4.4.2 Standard	<p>4.4.2 Reports of special observations shall be issued as:</p> <p>a) local special reports, only for dissemination at the aerodrome of origin (intended for arriving and departing aircraft); and</p> <p>b) SPECI for dissemination beyond the aerodrome of origin (mainly intended for flight planning, VOLMET broadcasts and D-VOLMET) unless METAR are issued at half-hourly intervals.</p> <p><i>Note.— Meteorological information used in ATIS (voice-ATIS and D-ATIS) is to be extracted from the local special report, in accordance with Annex 11, 4.3.6.1 g).</i></p>	CV-CAR 16, 16.E.220 (b)	No Difference		
Chapter 4 Reference 4.4.3 Standard	<p>4.4.3 At aerodromes that are not operational throughout 24 hours in accordance with 4.3.1, following the resumption of the issuance of METAR, SPECI shall be issued, as necessary.</p>	CV-CAR 1616.E.220(c)	No Difference		



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Chapter 4 Reference 4.5.1 Standard	<p style="text-align: center;">4.5 Contents of reports</p> <p>4.5.1 Local routine reports, local special reports, METAR and SPECI shall contain the following elements in the order indicated:</p> <ul style="list-style-type: none"> a) identification of the type of report; b) location indicator; c) time of the observation; d) identification of an automated or missing report, when applicable; e) surface wind direction and speed; f) visibility; g) runway visual range, when applicable; h) present weather; i) cloud amount, cloud type (only for cumulonimbus and towering cumulus clouds) and height of cloud base or, where measured, vertical visibility; j) air temperature and dew-point temperature; and k) QNH and, when applicable, QFE (QFE included only in local routine and special reports). <p><i>Note.— The location indicators referred to under b) and their significations are published in Location Indicators (Doc 7910).</i></p>	CV-CAR 1616.E.225(a)	No Difference		



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Chapter 4 Reference 4.5.2 Recommendation	4.5.2 Recommendation. — <i>In addition to elements listed under 4.5.1 a) to k), local routine reports, local special reports, METAR and SPECI should contain supplementary information to be placed after element k).</i>	CV-CAR 1616.E.225(b)	No Difference		
Chapter 4 Reference 4.5.3 Standard	4.5.3 Optional elements included under supplementary information shall be included in METAR and SPECI in accordance with regional air navigation agreement.	CV-CAR 1616.E.225(c)	No Difference		
Chapter 4 Reference 4.6.1.1 Standard	<p>4.6 Observing and reporting meteorological elements</p> <p>4.6.1 Surface wind</p> <p>4.6.1.1 The mean direction and the mean speed of the surface wind shall be measured, as well as significant variations of the wind direction and speed, and reported in degrees true and metres per second (or knots), respectively.</p>	CV-CAR 1616.E.230(a)	No Difference		
Chapter 4 Reference 4.6.1.2 Recommendation	4.6.1.2 Recommendation. — <i>When local routine and special reports are used for departing aircraft, the surface wind observations for these reports should be representative of conditions along the runway; when local routine and special reports are used for arriving aircraft, the surface wind observations for these reports should be representative of the touchdown zone.</i>	CV-CAR 1616.E.230(b) e (c)	No Difference		



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Chapter 4 Reference 4.6.1.3 Recommendation	4.6.1.3 Recommendation. — <i>For METAR and SPECI, the surface wind observations should be representative of conditions above the whole runway where there is only one runway and the whole runway complex where there is more than one runway.</i>	CV-CAR 1616.E.230(d)	No Difference		
Chapter 4 Reference 4.6.2.1 Standard	4.6.2 Visibility 4.6.2.1 The visibility as defined in Chapter 1 shall be measured or observed, and reported in metres or kilometres. <i>Note.— Guidance on the conversion of instrument readings into visibility is given in Attachment D.</i>	CV-CAR 1616.E.235(a)	No Difference		
Chapter 4 Reference 4.6.2.2 Recommendation	4.6.2.2 Recommendation. — <i>When local routine and special reports are used for departing aircraft, the visibility observations for these reports should be representative of conditions along the runway; when local routine and special reports are used for arriving aircraft, the visibility observations for these reports should be representative of the touchdown zone of the runway.</i>	CV-CAR 1616.E.235(b) e (c)	No Difference		
Chapter 4 Reference 4.6.2.3 Recommendation	4.6.2.3 Recommendation. — <i>For METAR and SPECI, the visibility observations should be representative of the aerodrome.</i>	CV-CAR 1616.E.235(d)	No Difference		



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Chapter 4 Reference 4.6.3.1 Standard	<p>4.6.3 Runway visual range</p> <p><i>Note.— Guidance on the subject of runway visual range is contained in the Manual of Runway Visual Range Observing and Reporting Practices (Doc 9328).</i></p> <p>4.6.3.1 Runway visual range as defined in Chapter 1 shall be assessed on all runways intended for Category II and III instrument approach and landing operations.</p>	CV-CAR 1616.E.240(a)	No Difference		
Chapter 4 Reference 4.6.3.2 Recommendation	<p>4.6.3.2 Recommendation.— <i>Runway visual range as defined in Chapter 1 should be assessed on all runways intended for use during periods of reduced visibility, including:</i></p> <p><i>a) precision approach runways intended for Category I instrument approach and landing operations; and</i></p> <p><i>b) runways used for take-off and having high-intensity edge lights and/or centre line lights.</i></p> <p><i>Note.— Precision approach runways are defined in Annex 14, Volume I, Chapter 1, under “Instrument runway”.</i></p>	CV-CAR 1616.E.240(b)	No Difference		
Chapter 4 Reference 4.6.3.3 Standard	<p>4.6.3.3 The runway visual range, assessed in accordance with 4.6.3.1 and 4.6.3.2, shall be reported in metres throughout periods when either the visibility or the runway visual range is less than 1 500 m.</p>	CV-CAR 1616.E.240(c) e (d)	No Difference		



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Chapter 4 Reference 4.6.3.4 Standard	<p>4.6.3.4 Runway visual range assessments shall be representative of:</p> <p>a) the touchdown zone of the runway intended for non-precision or Category I instrument approach and landing operations;</p> <p>b) the touchdown zone and the mid-point of the runway intended for Category II instrument approach and landing operations; and</p> <p>c) the touchdown zone, the mid-point and stop-end of the runway intended for Category III instrument approach and landing operations.</p>	CV-CAR 1616.E.240(e)	No Difference		
Chapter 4 Reference 4.6.3.5 Standard	<p>4.6.3.5 The units providing air traffic service and aeronautical information service for an aerodrome shall be kept informed without delay of changes in the serviceability status of the automated equipment used for assessing runway visual range.</p>	CV-CAR 1616.E.240(f)	No Difference		
Chapter 4 Reference 4.6.4.1 Standard	<p>4.6.4 Present weather</p> <p>4.6.4.1 The present weather occurring at the aerodrome shall be observed and reported as necessary. The following present weather phenomena shall be identified, as a minimum: rain, drizzle, snow and freezing precipitation (including intensity thereof), haze, mist, fog, freezing fog and thunderstorms (including thunderstorms in the vicinity).</p>	CV-CAR 1616.E.245(a) e (b)	No Difference		



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Chapter 4 Reference 4.6.4.2 Recommendation	4.6.4.2 Recommendation. — <i>For local routine and special reports, the present weather information should be representative of conditions at the aerodrome.</i>	CV-CAR 1616.E.245(c)	No Difference		
Chapter 4 Reference 4.6.4.3 Recommendation	4.6.4.3 Recommendation. — <i>For METAR and SPECI, the present weather information should be representative of conditions at the aerodrome and, for certain specified present weather phenomena, in its vicinity.</i>	CV-CAR 1616.E.245(d)	No Difference		
Chapter 4 Reference 4.6.5.1 Standard	4.6.5 Clouds 4.6.5.1 Cloud amount, cloud type and height of cloud base shall be observed and reported as necessary to describe the clouds of operational significance. When the sky is obscured, vertical visibility shall be observed and reported, where measured, in lieu of cloud amount, cloud type and height of cloud base. The height of cloud base and vertical visibility shall be reported in metres (or feet).	CV-CAR 1616.E.250(a),(b),(c)	No Difference		
Chapter 4 Reference 4.6.5.2 Recommendation	4.6.5.2 Recommendation. — <i>Cloud observations for local routine and special reports should be representative of the runway threshold(s) in use.</i>	CV-CAR 1616.E.250(d)	No Difference		



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Chapter 4 Reference 4.6.5.3 Recommendation	4.6.5.3 Recommendation. — <i>Cloud observations for METAR and SPECI should be representative of the aerodrome and its vicinity.</i>	CV-CAR 1616.E.250(e)	No Difference		
Chapter 4 Reference 4.6.6.1 Standard	4.6.6 Air temperature and dew-point temperature 4.6.6.1 The air temperature and the dew-point temperature shall be measured and reported in degrees Celsius.	CV-CAR 1616.E.255(a)	No Difference		
Chapter 4 Reference 4.6.6.2 Recommendation	4.6.6.2 Recommendation. — <i>Observations of air temperature and dew-point temperature for local routine reports, local special reports, METAR and SPECI should be representative of the whole runway complex.</i>	CV-CAR 1616.E.255(b)	No Difference		
Chapter 4 Reference 4.6.7 Standard	4.6.7 Atmospheric pressure The atmospheric pressure shall be measured, and QNH and QFE values shall be computed and reported in hectopascals.	CV-CAR 1616.E.260	No Difference		



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Chapter 4 Reference 4.6.8.0.2 Recommendation	4.6.8 Supplementary information Recommendation. — <i>Observations made at aerodromes should include the available supplementary information concerning significant meteorological conditions, particularly those in the approach and climb-out areas. Where practicable, the information should identify the location of the meteorological condition.</i>	CV-CAR 1616.E.265(a) e (b)	No Difference		
Chapter 4 Reference 4.7.1 Recommendation	4.7 Reporting meteorological information from automatic observing systems 4.7.1 Recommendation. — <i>METAR and SPECI from automatic observing systems should be used by States in a position to do so during non-operational hours of the aerodrome, and during operational hours of the aerodrome as determined by the meteorological authority in consultation with users based on the availability and efficient use of personnel.</i> <i>Note.</i> — <i>Guidance on the use of automatic meteorological observing systems is given in Doc 9837.</i>	CV-CAR 1616.E.270(a)	No Difference		
Chapter 4 Reference 4.7.2 Recommendation	4.7.2 Recommendation. — <i>Local routine and special reports from automatic observing systems should be used by States in a position to do so during operational hours of the aerodrome as determined by the meteorological authority in consultation with users based on the availability and efficient use of personnel.</i>	CV-CAR 1616.E.270(b)	No Difference		



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Chapter 4 Reference 4.7.3 Standard	4.7.3 Local routine reports, local special reports, METAR and SPECI from automatic observing systems shall be identified with the word "AUTO".	CV-CAR 1616.E.270(c)	No Difference		



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Chapter 4 Reference 4.8.0.3 Recommendation	<p style="text-align: center;">4.8 Observations and reports of volcanic activity</p> <p>Recommendation.— <i>The occurrence of pre-eruption volcanic activity, volcanic eruptions and volcanic ash cloud should be reported without delay to the associated air traffic services unit, aeronautical information services unit and meteorological watch office. The report should be made in the form of a volcanic activity report comprising the following information in the order indicated:</i></p> <ul style="list-style-type: none"> a) <i>message type, VOLCANIC ACTIVITY REPORT;</i> b) <i>station identifier, location indicator or name of station;</i> c) <i>date/time of message;</i> d) <i>location of volcano and name if known; and</i> e) <i>concise description of event including, as appropriate, level of intensity of volcanic activity, occurrence of an eruption and its date and time, and the existence of a volcanic ash cloud in the area together with direction of ash cloud movement and height.</i> <p><i>Note.</i>— <i>Pre-eruption volcanic activity in this context means unusual and/or increasing volcanic activity which could presage a volcanic eruption.</i></p>	CV-CAR 1616.E.275(a) e (b)	No Difference		



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Chapter 5 Reference 5.1 Standard	<p style="text-align: center;">CHAPTER 5. AIRCRAFT OBSERVATIONS AND REPORTS</p> <p style="text-align: center;"><i>Note.— Technical specifications and detailed criteria related to this chapter are given in Appendix 4.</i></p> <p style="text-align: center;">5.1 Obligations of States</p> <p>Each Contracting State shall arrange, according to the provisions of this chapter, for observations to be made by aircraft of its registry operating on international air routes and for the recording and reporting of these observations.</p>	CV-CAR 1616.E.300CV-CAR 1616.E.305	No Difference		
Chapter 5 Reference 5.2 Standard	<p style="text-align: center;">5.2 Types of aircraft observations</p> <p>The following aircraft observations shall be made:</p> <ul style="list-style-type: none"> a) routine aircraft observations during en-route and climb-out phases of the flight; and b) special and other non-routine aircraft observations during any phase of the flight. 	CV-CAR 1616.E.310	No Difference		



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Chapter 5 Reference 5.3.1 Recommendation	<p>5.3 Routine aircraft observations — designation</p> <p>5.3.1 Recommendation.— <i>When air-ground data link is used and automatic dependent surveillance — contract (ADS-C) or secondary surveillance radar (SSR) Mode S is being applied, automated routine observations should be made every 15 minutes during the en-route phase and every 30 seconds during the climb-out phase for the first 10 minutes of the flight.</i></p>	CV-CAR 1616.E.315(a)	No Difference		
Chapter 5 Reference 5.3.2 Recommendation	<p>5.3.2 Recommendation.— <i>For helicopter operations to and from aerodromes on offshore structures, routine observations should be made from helicopters at points and times as agreed between the meteorological authorities and the helicopter operators concerned.</i></p>		Not Applicable		Not used in Cabo verde
Chapter 5 Reference 5.3.3 Standard	<p>5.3.3 In the case of air routes with high-density air traffic (e.g. organized tracks), an aircraft from among the aircraft operating at each flight level shall be designated, at approximately hourly intervals, to make routine observations in accordance with 5.3.1. The designation procedures shall be in accordance with regional air navigation agreement.</p>	CV-CAR 1616.E.315(b) e (c)	No Difference		
Chapter 5 Reference 5.3.4 Standard	<p>5.3.4 In the case of the requirement to report during the climb-out phase, an aircraft shall be designated, at approximately hourly intervals, at each aerodrome to make routine observations in accordance with 5.3.1.</p>	CV-CAR 1616.E.315(d)	No Difference		



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Chapter 5 Reference 5.4 Standard	<p>5.4 Routine aircraft observations — exemptions</p> <p>Aircraft not equipped with air-ground data link shall be exempted from making routine aircraft observations.</p>	CV-CAR 1616.E.320	No Difference		



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Chapter 5 Reference 5.5 Standard	<p style="text-align: center;">5.5 Special aircraft observations</p> <p>Special observations shall be made by all aircraft whenever the following conditions are encountered or observed:</p> <ul style="list-style-type: none"> a) moderate or severe turbulence; or b) moderate or severe icing; or c) severe mountain wave; or d) thunderstorms, without hail, that are obscured, embedded, widespread or in squall lines; or e) thunderstorms, with hail, that are obscured, embedded, widespread or in squall lines; or f) heavy duststorm or heavy sandstorm; or g) volcanic ash cloud; or h) pre-eruption volcanic activity or a volcanic eruption; or <p><i>Note.— Pre-eruption volcanic activity in this context means unusual and/or increasing volcanic activity which could presage a volcanic eruption.</i></p> <ul style="list-style-type: none"> i) as of 5 November 2020, runway braking action encountered is not as good as reported. 	CV-CAR 1616.E.325(a)	No Difference		



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Chapter 5 Reference 5.6 Standard	<p align="center">5.6 Other non-routine aircraft observations</p> <p>When other meteorological conditions not listed under 5.5, e.g. wind shear, are encountered and which, in the opinion of the pilot-in-command, may affect the safety or markedly affect the efficiency of other aircraft operations, the pilot-in-command shall advise the appropriate air traffic services unit as soon as practicable.</p> <p><i>Note.— Icing, turbulence and, to a large extent, wind shear are elements which, for the time being, cannot be satisfactorily observed from the ground and for which in most cases aircraft observations represent the only available evidence.</i></p>	CV-CAR 1616.E.330(a)	No Difference		
Chapter 5 Reference 5.7.1 Standard	<p align="center">5.7 Reporting of aircraft observations during flight</p> <p>5.7.1 Aircraft observations shall be reported by air-ground data link. Where air-ground data link is not available or appropriate, special and other non-routine aircraft observations during flight shall be reported by voice communications.</p>	CV-CAR 1616.E.335(a) e (b)	No Difference		
Chapter 5 Reference 5.7.2 Standard	<p>5.7.2 Aircraft observations shall be reported during flight at the time the observation is made or as soon thereafter as is practicable.</p>	CV-CAR 1616.E.335(c)	No Difference		



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Chapter 5 Reference 5.7.3 Standard	5.7.3 Aircraft observations shall be reported as air-reports.	CV-CAR 1616.E.335(d)	No Difference		
Chapter 5 Reference 5.8 Standard	<p>5.8 Relay of air-reports by air traffic services units</p> <p>The meteorological authority concerned shall make arrangements with the appropriate ATS authority to ensure that, on receipt by the air traffic services units of:</p> <p>a) special air-reports by voice communications, the air traffic services units relay them without delay to their associated meteorological watch office; and</p> <p>b) routine and special air-reports by data link communications, the air traffic services units relay them without delay to their associated meteorological watch office, the WAFCs and the centres designated by regional air navigation agreement for the operation of aeronautical fixed service Internet-based services.</p>	CV-CAR 1616.E.340	No Difference		



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Chapter 5 Reference 5.9 Standard	<p align="center">5.9 Recording and post-flight reporting of aircraft observations of volcanic activity</p> <p>Special aircraft observations of pre-eruption volcanic activity, a volcanic eruption or volcanic ash cloud shall be recorded on the special air-report of volcanic activity form. A copy of the form shall be included with the flight documentation provided to flights operating on routes which, in the opinion of the meteorological authority concerned, could be affected by volcanic ash clouds.</p>	CV-CAR 1616.E.345(a) e (b)	No Difference		
Chapter 6 Reference 6.1 Standard	<p align="center">CHAPTER 6. FORECASTS</p> <p align="center"><i>Note.— Technical specifications and detailed criteria related to this chapter are given in Appendix 5.</i></p> <p align="center">6.1 Use of forecasts</p> <p>The issue of a new forecast by an aerodrome meteorological office, such as a routine aerodrome forecast, shall be understood to cancel automatically any forecast of the same type previously issued for the same place and for the same period of validity or part thereof.</p>	CV-CAR 1616.E.400CV-CAR 1616.B.110(k) e (l)	No Difference		



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Chapter 6 Reference 6.2.1 Standard	<p align="center">6.2 Aerodrome forecasts</p> <p>6.2.1 An aerodrome forecast shall be prepared, in accordance with regional air navigation agreement, by the aerodrome meteorological office designated by the meteorological authority concerned.</p> <p><i>Note.— The aerodromes for which aerodrome forecasts are to be prepared and the period of validity of these forecasts are listed in the relevant facilities and services implementation document (FASID).</i></p>	CV-CAR 1616.E.410(a)	No Difference		
Chapter 6 Reference 6.2.2 Standard	<p>6.2.2 An aerodrome forecast shall be issued at a specified time not earlier than one hour prior to the beginning of its validity period and consist of a concise statement of the expected meteorological conditions at an aerodrome for a specified period.</p>	CV-CAR 1616.E.410(b) e (c)	No Difference		



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Chapter 6 Reference 6.2.3 Standard	<p>6.2.3 Aerodrome forecasts and amendments thereto shall be issued as TAF and include the following information in the order indicated:</p> <ul style="list-style-type: none"> a) identification of the type of forecast; b) location indicator; c) time of issue of forecast; d) identification of a missing forecast, when applicable; e) date and period of validity of forecast; f) identification of a cancelled forecast, when applicable; g) surface wind; h) visibility; i) weather; j) cloud; and k) expected significant changes to one or more of these elements during the period of validity. <p>Optional elements shall be included in TAF in accordance with regional air navigation agreement.</p> <p><i>Note.— The visibility included in TAF refers to the forecast prevailing visibility.</i></p>	CV-CAR 1616.E.410(e) e (f)	No Difference		



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Chapter 6 Reference 6.2.4 Standard	<p>6.2.4 Aerodrome meteorological offices preparing TAF shall keep the forecasts under continuous review and, when necessary, shall issue amendments promptly. The length of the forecast messages and the number of changes indicated in the forecast shall be kept to a minimum.</p> <p><i>Note.— Guidance on methods to keep TAF under continuous review is given in Chapter 3 of the Manual of Aeronautical Meteorological Practice (Doc 8896).</i></p>	CV-CAR 1616.E.410(h) e (i)	No Difference		
Chapter 6 Reference 6.2.5 Standard	<p>6.2.5 TAF that cannot be kept under continuous review shall be cancelled.</p>	CV-CAR 1616.E.410(l)	No Difference		
Chapter 6 Reference 6.2.6 Recommendation	<p>6.2.6 Recommendation.— <i>The period of validity of a routine TAF should be not less than 6 hours and not more than 30 hours; the period of validity should be determined by regional air navigation agreement. Routine TAF valid for less than 12 hours should be issued every 3 hours and those valid for 12 to 30 hours should be issued every 6 hours.</i></p>	CV-CAR 1616.E.410(m)	No Difference		
Chapter 6 Reference 6.2.7 Standard	<p>6.2.7 When issuing TAF, aerodrome meteorological offices shall ensure that not more than one TAF is valid at an aerodrome at any given time.</p>	CV-CAR 1616.E.410(o)	No Difference		



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Chapter 6 Reference 6.3.1 Standard	<p style="text-align: center;">6.3 Landing forecasts</p> <p>6.3.1 A landing forecast shall be prepared by the aerodrome meteorological office designated by the meteorological authority concerned as determined by regional air navigation agreement; such forecasts are intended to meet the requirements of local users and of aircraft within about one hour's flying time from the aerodrome.</p>	CV-CAR 1616.E.415(a) e (b)	No Difference		
Chapter 6 Reference 6.3.2 Standard	6.3.2 Landing forecasts shall be prepared in the form of a trend forecast.	CV-CAR 1616.E.415(c)	No Difference		
Chapter 6 Reference 6.3.3 Standard	6.3.3 A trend forecast shall consist of a concise statement of the expected significant changes in the meteorological conditions at that aerodrome to be appended to a local routine report, local special report, METAR or SPECI. The period of validity of a trend forecast shall be 2 hours from the time of the report which forms part of the landing forecast.	CV-CAR 1616.E.415(d)	No Difference		
Chapter 6 Reference 6.4.1 Standard	<p style="text-align: center;">6.4 Forecasts for take-off</p> <p>6.4.1 A forecast for take-off shall be prepared by the aerodrome meteorological office designated by the meteorological authority concerned as agreed between the meteorological authority and the operators concerned.</p>	CV-CAR 1616.E.420(a)	No Difference		



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Chapter 6 Reference 6.4.2 Recommendation	6.4.2 Recommendation. — <i>A forecast for take-off should refer to a specified period of time and should contain information on expected conditions over the runway complex in regard to surface wind direction and speed and any variations thereof, temperature, pressure (QNH), and any other elements as agreed locally.</i>	CV-CAR 1616.E.420(1) (2) (b)	No Difference		
Chapter 6 Reference 6.4.3 Recommendation	6.4.3 Recommendation. — <i>A forecast for take-off should be supplied to operators and flight crew members on request within the 3 hours before the expected time of departure.</i>	CV-CAR 1616.E.420(3) (b)	No Difference		
Chapter 6 Reference 6.4.4 Recommendation	6.4.4 Recommendation. — <i>Aerodrome meteorological offices preparing forecasts for take-off should keep the forecasts under continuous review and, when necessary, should issue amendments promptly.</i>	CV-CAR 1616.E.420(4) (b)	No Difference		
Chapter 6 Reference 6.5.1 Standard	6.5 Area forecasts for low-level flights 6.5.1 When the density of traffic operating below flight level 100 (or up to flight level 150 in mountainous areas, or higher, where necessary) warrants the routine issue and dissemination of area forecasts for such operations, the frequency of issue, the form and the fixed time or period of validity of those forecasts and the criteria for amendments thereto shall be determined by the meteorological authority in consultation with the users.	CV-CAR 1616.E.425(a)	No Difference		



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Chapter 6 Reference 6.5.2 Standard	6.5.2 When the density of traffic operating below flight level 100 warrants the issuance of AIRMET information in accordance with 7.2.1, area forecasts for such operations shall be prepared in a format as agreed between the meteorological authorities in the States concerned. When abbreviated plain language is used, the forecast shall be prepared as a GAMET area forecast, employing approved ICAO abbreviations and numerical values; when chart form is used, the forecast shall be prepared as a combination of forecasts of upper wind and upper-air temperature, and of SIGWX phenomena. The area forecasts shall be issued to cover the layer between the ground and flight level 100 (or up to flight level 150 in mountainous areas, or higher, where necessary) and shall contain information on en-route weather phenomena hazardous to low-level flights, in support of the issuance of AIRMET information, and additional information required by low-level flights.	CV-CAR 1616.E.425(b),(c),(d),(e)	No Difference		
Chapter 6 Reference 6.5.3 Standard	6.5.3 Area forecasts for low-level flights prepared in support of the issuance of AIRMET information shall be issued every 6 hours for a period of validity of 6 hours and transmitted to meteorological watch offices and/or aerodrome meteorological offices concerned not later than one hour prior to the beginning of their validity period.	CV-CAR 1616.E.425(f)	No Difference		



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Chapter 7 Reference 7.1.1 Standard	<p style="text-align: center;">CHAPTER 7. SIGMET AND AIRMET INFORMATION, AERODROME WARNINGS AND WIND SHEAR WARNINGS AND ALERTS</p> <p style="text-align: center;"><i>Note.— Technical specifications and detailed criteria related to this chapter are given in Appendix 6.</i></p> <p style="text-align: center;">7.1 SIGMET information</p> <p>7.1.1 SIGMET information shall be issued by a meteorological watch office and shall give a concise description in abbreviated plain language concerning the occurrence or expected occurrence of specified en-route weather and other phenomena in the atmosphere that may affect the safety of aircraft operations, and of the development of those phenomena in time and space.</p>	CV-CAR 1616.E.500CV-CAR 1616.E.505(a)	No Difference		
Chapter 7 Reference 7.1.2 Standard	7.1.2 SIGMET information shall be cancelled when the phenomena are no longer occurring or are no longer expected to occur in the area.	CV-CAR 1616.E.505(b)	No Difference		



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Chapter 7 Reference 7.1.3 Standard	7.1.3 The period of validity of a SIGMET message shall be not more than 4 hours. In the special case of SIGMET messages for volcanic ash cloud and tropical cyclones, the period of validity shall be extended up to 6 hours.	CV-CAR 1616.E.505(c),(d)	No Difference		
Chapter 7 Reference 7.1.4 Recommendation	7.1.4 Recommendation. — <i>SIGMET messages concerning volcanic ash cloud and tropical cyclones should be based on advisory information provided by VAACs and TCACs, respectively, designated by regional air navigation agreement.</i>	CV-CAR 1616.E.505(f)	No Difference		
Chapter 7 Reference 7.1.5 Standard	7.1.5 Close coordination shall be maintained between the meteorological watch office and the associated area control centre/flight information centre to ensure that information on volcanic ash included in SIGMET and NOTAM messages is consistent.	CV-CAR 1616.E.505(g)	No Difference		
Chapter 7 Reference 7.1.6 Standard	7.1.6 SIGMET messages shall be issued not more than 4 hours before the commencement of the period of validity. In the special case of SIGMET messages for volcanic ash cloud and tropical cyclones, these messages shall be issued as soon as practicable but not more than 12 hours before the commencement of the period of validity. SIGMET messages for volcanic ash and tropical cyclones shall be updated at least every 6 hours.	CV-CAR 1616.E.505(h),(i),(j)	No Difference		



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Chapter 7 Reference 7.2.1 Standard	<p align="center">7.2 AIRMET information</p> <p>7.2.1 AIRMET information shall be issued by a meteorological watch office in accordance with regional air navigation agreement, taking into account the density of air traffic operating below flight level 100. AIRMET information shall give a concise description in abbreviated plain language concerning the occurrence and/or expected occurrence of specified en-route weather phenomena, which have not been included in Section I of the area forecast for low-level flights issued in accordance with Chapter 6, 6.5 and which may affect the safety of low-level flights, and of the development of those phenomena in time and space.</p>	CV-CAR 1616.E.510(a),(b)	No Difference		
Chapter 7 Reference 7.2.2 Standard	<p>7.2.2 AIRMET information shall be cancelled when the phenomena are no longer occurring or are no longer expected to occur in the area.</p>	CV-CAR 1616.E.510(c)	No Difference		
Chapter 7 Reference 7.2.3 Standard	<p>7.2.3 The period of validity of an AIRMET message shall be not more than 4 hours.</p>	CV-CAR 1616.E.510(d)	No Difference		



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Chapter 7 Reference 7.3.1 Standard	<p style="text-align: center;">7.3 Aerodrome warnings</p> <p>7.3.1 Aerodrome warnings shall be issued by the aerodrome meteorological office designated by the meteorological authority concerned and shall give concise information of meteorological conditions which could adversely affect aircraft on the ground, including parked aircraft, and the aerodrome facilities and services.</p>	CV-CAR 1616.E.515(a)	No Difference		
Chapter 7 Reference 7.3.2 Recommendation	<p>7.3.2 Recommendation.— <i>Aerodrome warnings should be cancelled when the conditions are no longer occurring and/or no longer expected to occur at the aerodrome.</i></p>	CV-CAR 1616.E.515(b)	No Difference		



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Chapter 7 Reference 7.4.1 Standard	<p align="center">7.4 Wind shear warnings and alerts</p> <p><i>Note.— Guidance on the subject is contained in the Manual on Low-level Wind Shear (Doc 9817). Wind shear alerts are expected to complement wind shear warnings and together are intended to enhance situational awareness of wind shear.</i></p> <p>7.4.1 Wind shear warnings shall be prepared by the aerodrome meteorological office designated by the meteorological authority concerned for aerodromes where wind shear is considered a factor, in accordance with local arrangements with the appropriate air traffic services unit and the operators concerned. Wind shear warnings shall give concise information on the observed or expected existence of wind shear which could adversely affect aircraft on the approach path or take-off path or during circling approach between runway level and 500 m (1 600 ft) above that level and aircraft on the runway during the landing roll or take-off run. Where local topography has been shown to produce significant wind shears at heights in excess of 500 m (1 600 ft) above runway level, then 500 m (1 600 ft) shall not be considered restrictive.</p>	CV-CAR 1616.E.520(a),(b),(c)	No Difference		
Chapter 7 Reference 7.4.2 Recommendation	<p>7.4.2 Recommendation.— <i>Wind shear warnings for arriving aircraft and/or departing aircraft should be cancelled when aircraft reports indicate that wind shear no longer exists or, alternatively, after an agreed elapsed time. The criteria for the cancellation of a wind shear warning should be defined locally for each aerodrome, as agreed between the meteorological authority, the appropriate ATS authority and the operators concerned.</i></p>	CV-CAR 1616.E.520(d),(e)	No Difference		



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Chapter 7 Reference 7.4.3 Standard	7.4.3 At aerodromes where wind shear is detected by automated, ground-based, wind shear remote-sensing or detection equipment, wind shear alerts generated by these systems shall be issued. Wind shear alerts shall give concise, up-to-date information related to the observed existence of wind shear involving a headwind/tailwind change of 7.5 m/s (15 kt) or more which could adversely affect aircraft on the final approach path or initial take-off path and aircraft on the runway during the landing roll or take-off run.	CV-CAR 1616.E.520(f),(g)	No Difference		
Chapter 7 Reference 7.4.4 Recommendation	7.4.4 Recommendation. — <i>Wind shear alerts should be updated at least every minute. The wind shear alert should be cancelled as soon as the headwind/tailwind change falls below 7.5 m/s (15 kt).</i>	CV-CAR 1616.E.520(i),(j)	No Difference		



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<p>Chapter 8 Reference 8.1.1</p> <p>Standard</p>	<p style="text-align: center;">CHAPTER 8. AERONAUTICAL CLIMATOLOGICAL INFORMATION</p> <p><i>Note.— Technical specifications and detailed criteria related to this chapter are given in Appendix 7.</i></p> <p style="text-align: center;">8.1 General provisions</p> <p><i>Note.— In cases where it is impracticable to meet the requirements for aeronautical climatological information on a national basis, the collection, processing and storage of observational data may be effected through computer facilities available for international use, and the responsibility for the preparation of the required aeronautical climatological information may be delegated as agreed between the meteorological authorities concerned.</i></p> <p>8.1.1 Aeronautical climatological information required for the planning of flight operations shall be prepared in the form of aerodrome climatological tables and aerodrome climatological summaries. Such information shall be supplied to aeronautical users as agreed between the meteorological authority and the user concerned.</p> <p><i>Note.— Climatological data required for aerodrome planning purposes are set out in Annex 14, Volume I, 3.1.4 and Attachment A.</i></p>	<p>CV-CAR 1616.E.600CV-CAR 1616.E.605(a),(b)</p>	<p>No Difference</p>		



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Chapter 8 Reference 8.1.2 Recommendation	8.1.2 Recommendation. — <i>Aeronautical climatological information should normally be based on observations made over a period of at least five years and the period should be indicated in the information supplied.</i>	CV-CAR 1616.E.605(c)	No Difference		
Chapter 8 Reference 8.1.3 Recommendation	8.1.3 Recommendation. — <i>Climatological data related to sites for new aerodromes and to additional runways at existing aerodromes should be collected starting as early as possible before the commissioning of those aerodromes or runways.</i>	CV-CAR 1616.E.605(d)	No Difference		
Chapter 8 Reference 8.2.0.1 Recommendation	<p style="text-align: center;">8.2 Aerodrome climatological tables</p> <p>Recommendation.— <i>Each Contracting State should make arrangements for collecting and retaining the necessary observational data and have the capability:</i></p> <ul style="list-style-type: none"> <i>a) to prepare aerodrome climatological tables for each regular and alternate international aerodrome within its territory; and</i> <i>b) to make available such climatological tables to an aeronautical user within a time period as agreed between the meteorological authority and the user concerned.</i> 	CV-CAR 1616.E.610(a)	No Difference		



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Chapter 8 Reference 8.3.0.2 Recommendation	<p align="center">8.3 Aerodrome climatological summaries</p> <p>Recommendation.— <i>Aerodrome climatological summaries should follow the procedures prescribed by the World Meteorological Organization (WMO). Where computer facilities are available to store, process and retrieve the information, the summaries should be published or otherwise made available to aeronautical users on request. Where such computer facilities are not available, the summaries should be prepared using the models specified by WMO and should be published and kept up to date as necessary.</i></p>	CV-CAR 1616.E.615(a),(b),(c)	No Difference		
Chapter 8 Reference 8.4 Standard	<p align="center">8.4 Copies of meteorological observational data</p> <p>Each meteorological authority, on request and to the extent practicable, shall make available to any other meteorological authority, to operators and to others concerned with the application of meteorology to international air navigation, meteorological observational data required for research, investigation or operational analysis.</p>	CV-CAR 1616.E.620	No Difference		



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Chapter 9 Reference 9.1.1 Standard	<p style="text-align: center;">CHAPTER 9. SERVICE FOR OPERATORS AND FLIGHT CREW MEMBERS</p> <p style="text-align: center;"><i>Note.— Technical specifications and detailed criteria related to this chapter are given in Appendix 8.</i></p> <p style="text-align: center;">9.1 General provisions</p> <p>9.1.1 Meteorological information shall be supplied to operators and flight crew members for:</p> <ul style="list-style-type: none"> a) pre-flight planning by operators; b) in-flight replanning by operators using centralized operational control of flight operations; c) use by flight crew members before departure; and d) aircraft in flight. 	CV-CAR 1616.E.700CV-CAR 1616.E.705(a)	No Difference		
Chapter 9 Reference 9.1.2 Standard	9.1.2 Meteorological information supplied to operators and flight crew members shall cover the flight in respect of time, altitude and geographical extent. Accordingly, the information shall relate to appropriate fixed times, or periods of time, and shall extend to the aerodrome of intended landing, also covering the meteorological conditions expected between the aerodrome of intended landing and alternate aerodromes designated by the operator.	CV-CAR 1616.E.705(b),(c)	No Difference		



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<p>Chapter 9 Reference 9.1.3 Standard</p>	<p>9.1.3 Meteorological information supplied to operators and flight crew members shall be up to date and include the following information, as agreed between the meteorological authority and the operators concerned:</p> <p>a) forecasts of:</p> <ol style="list-style-type: none"> 1) upper wind and upper-air temperature; 2) upper-air humidity; 3) geopotential altitude of flight levels; 4) flight level and temperature of tropopause; 5) direction, speed and flight level of maximum wind; 6) SIGWX phenomena; and 7) cumulonimbus clouds, icing and turbulence; <p><i>Note 1.— Forecasts of upper-air humidity and geopotential altitude of flight levels are used only in automatic flight planning and need not be displayed.</i></p> <p><i>Note 2.— Forecasts of cumulonimbus clouds, icing and turbulence are intended to be processed and, if necessary, visualized according to the specific thresholds relevant to user operations.</i></p> <p>b) METAR or SPECI (including trend forecasts as issued in accordance with regional air navigation agreement) for the aerodromes of departure and intended landing, and for take-off, en-route and destination alternate aerodromes;</p> <p>c) TAF or amended TAF for the aerodromes of</p>	<p>CV-CAR 1616.E.705(d)</p>	<p>No Difference</p>		



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	<p>departure and intended landing, and for take-off, en-route and destination alternate aerodromes;</p> <p>d) forecasts for take-off;</p> <p>e) SIGMET information and appropriate special air-reports relevant to the whole route;</p> <p><i>Note.— Appropriate special air-reports will be those not already used in the preparation of SIGMET.</i></p> <p>f) volcanic ash and tropical cyclone advisory information relevant to the whole route;</p> <p>g) as determined by regional air navigation agreement, GAMET area forecasts and/or area forecasts for low-level flights in chart form prepared in support of the issuance of AIRMET information, and AIRMET information for low-level flights relevant to the whole route;</p> <p>h) aerodrome warnings for the local aerodrome;</p> <p>i) meteorological satellite images;</p> <p>j) ground-based weather radar information; and</p> <p>k) space weather advisory information relevant to the whole route.</p>				
<p>Chapter 9 Reference 9.1.4 Standard</p>	<p>9.1.4 Forecasts listed under 9.1.3 a) shall be generated from the digital forecasts provided by the WAFCs whenever these forecasts cover the intended flight path in respect of time, altitude and geographical extent, unless otherwise agreed between the meteorological authority and the operator concerned.</p>	<p>CV-CAR 1616.E.705(e)</p>	<p>No Difference</p>		



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Chapter 9 Reference 9.1.5 Standard	9.1.5 When forecasts are identified as being originated by the WAFCs, no modifications shall be made to their meteorological content.	CV-CAR 1616.E.705(f)	No Difference		
Chapter 9 Reference 9.1.6 Standard	9.1.6 Charts generated from the digital forecasts provided by the WAFCs shall be made available, as required by operators, for fixed areas of coverage as shown in Appendix 8, Figures A8-1, A8-2 and A8-3.	CV-CAR 1616.E.705(g)	No Difference		
Chapter 9 Reference 9.1.7 Standard	9.1.7 When forecasts of upper wind and upper-air temperature listed under 9.1.3 a) 1) are supplied in chart form, they shall be fixed time prognostic charts for flight levels as specified in Appendix 2, 1.2.2 a). When forecasts of SIGWX phenomena listed under 9.1.3 a) 6) are supplied in chart form, they shall be fixed time prognostic charts for an atmospheric layer limited by flight levels as specified in Appendix 2, 1.3.2 and Appendix 5, 4.3.2.	CV-CAR 1616.E.705(h),(i)	No Difference		
Chapter 9 Reference 9.1.8 Standard	9.1.8 The forecasts of upper wind and upper-air temperature and of SIGWX phenomena above flight level 100 requested for pre-flight planning and in-flight replanning by the operator shall be supplied as soon as they become available, but not later than 3 hours before departure. Other meteorological information requested for pre-flight planning and in-flight replanning by the operator shall be supplied as soon as is practicable.	CV-CAR 1616.E.705(j),(k)	No Difference		



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Chapter 9 Reference 9.1.9 Standard	9.1.9 When necessary, the meteorological authority of the State providing service for operators and flight crew members shall initiate coordinating action with the meteorological authorities of other States with a view to obtaining from them the reports and/or forecasts required.	CV-CAR 1616.E.705(l)	No Difference		
Chapter 9 Reference 9.1.10 Standard	9.1.10 Meteorological information shall be supplied to operators and flight crew members at the location to be determined by the meteorological authority, after consultation with the operators concerned and at the time agreed between the aerodrome meteorological office and the operator concerned. The service for pre-flight planning shall be confined to flights originating within the territory of the State concerned. At an aerodrome without an aerodrome meteorological office at the aerodrome, arrangements for the supply of meteorological information shall be as agreed between the meteorological authority and the operator concerned.	CV-CAR 1616.E.705(m),(n),(o)	No Difference		



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Chapter 9 Reference 9.2.1 Standard	<p align="center">9.2 Briefing, consultation and display</p> <p><i>Note.— The requirements for the use of automated pre-flight information systems in providing briefing, consultation and display are given in 9.4.</i></p> <p>9.2.1 Briefing and/or consultation shall be provided, on request, to flight crew members and/or other flight operations personnel. Its purpose shall be to supply the latest available information on existing and expected meteorological conditions along the route to be flown, at the aerodrome of intended landing, alternate aerodromes and other aerodromes as relevant, either to explain and amplify the information contained in the flight documentation, or as agreed between the meteorological authority and the operator concerned, in lieu of flight documentation.</p>	CV-CAR 1616.E.710(a),(b)	No Difference		
Chapter 9 Reference 9.2.2 Standard	<p>9.2.2 Meteorological information used for briefing, consultation and display shall include any or all of the information listed in 9.1.3.</p>	CV-CAR 1616.E.710(c)	No Difference		
Chapter 9 Reference 9.2.3 Standard	<p>9.2.3 If the aerodrome meteorological office expresses an opinion on the development of the meteorological conditions at an aerodrome which differs appreciably from the aerodrome forecast included in the flight documentation, the attention of flight crew members shall be drawn to the divergence. The portion of the briefing dealing with the divergence shall be recorded at the time of briefing and this record shall be made available to the operator.</p>	CV-CAR 1616.E.710(d),(e)	No Difference		



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Chapter 9 Reference 9.2.4 Standard	9.2.4 The required briefing, consultation, display and/or flight documentation shall normally be provided by the aerodrome meteorological office associated with the aerodrome of departure. At an aerodrome where these services are not available, arrangements to meet the requirements of flight crew members shall be as agreed between the meteorological authority and the operator concerned. In exceptional circumstances, such as an undue delay, the aerodrome meteorological office associated with the aerodrome shall provide or, if that is not practicable, arrange for the provision of a new briefing, consultation and/or flight documentation as necessary.	CV-CAR 1616.E.710(f),(g),(h)	No Difference		
Chapter 9 Reference 9.2.5 Recommendation	9.2.5 Recommendation. — <i>The flight crew member and/or other flight operations personnel for whom briefing, consultation and/or flight documentation has been requested should visit the aerodrome meteorological office at the time agreed between the aerodrome meteorological office and the operator concerned. Where local circumstances at an aerodrome make personal briefing or consultation impracticable, the aerodrome meteorological office should provide those services by telephone or other suitable telecommunications facilities.</i>	CV-CAR 1616.E.710(i),(j)	No Difference		



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Chapter 9 Reference 9.3.1 Standard	<p style="text-align: center;">9.3 Flight documentation</p> <p><i>Note.— The requirements for the use of automated pre-flight information systems in providing flight documentation are given in 9.4.</i></p> <p>9.3.1 Flight documentation to be made available shall comprise information listed under 9.1.3 a) 1) and 6), b), c), e), f) and, if appropriate, g) and k). However, flight documentation for flights of two hours' duration or less, after a short stop or turnaround, shall be limited to the information operationally needed, as agreed between the meteorological authority and the operator concerned, but in all cases it shall at least comprise information on 9.1.3 b), c), e), f) and, if appropriate, g) and k).</p>	CV-CAR 1616.E.715(a),(b)	No Difference		
Chapter 9 Reference 9.3.2 Standard	<p>9.3.2 Whenever it becomes apparent that the meteorological information to be included in the flight documentation will differ materially from that made available for pre-flight planning and in flight replanning, the operator shall be advised immediately and, if practicable, be supplied with the revised information as agreed between the operator and the aerodrome meteorological office concerned.</p>	CV-CAR 1616.E.715(c)	No Difference		
Chapter 9 Reference 9.3.3 Recommendation	<p>9.3.3 Recommendation.— <i>In cases where a need for amendment arises after the flight documentation has been supplied, and before take-off of the aircraft, the aerodrome meteorological office should, as agreed locally, issue the necessary amendment or updated information to the operator or to the local air traffic services unit, for transmission to the aircraft.</i></p>	CV-CAR 1616.E.715(d)	No Difference		



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Chapter 9 Reference 9.3.4 Standard	9.3.4 The meteorological authority shall retain information supplied to flight crew members, either as printed copies or in computer files, for a period of at least 30 days from the date of issue. This information shall be made available, on request, for inquiries or investigations and, for these purposes, shall be retained until the inquiry or investigation is completed.	CV-CAR 1616.E.715(e),(f)	No Difference		
Chapter 9 Reference 9.4.1 Standard	9.4 Automated pre-flight information systems for briefing, consultation, flight planning and flight documentation 9.4.1 Where the meteorological authority uses automated pre-flight information systems to supply and display meteorological information to operators and flight crew members for self-briefing, flight planning and flight documentation purposes, the information supplied and displayed shall comply with the relevant provisions in 9.1 to 9.3 inclusive.	CV-CAR 1616.E.720(a)	No Difference		



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Chapter 9 Reference 9.4.2 Recommendation	<p>9.4.2 Recommendation.— <i>Automated pre-flight information systems providing for a harmonized, common point of access to meteorological information and aeronautical information services information by operators, flight crew members and other aeronautical personnel concerned should be as agreed between the meteorological authority and the civil aviation authority or the agency to which the authority to provide service has been delegated in accordance with Annex 15, 2.1.1 c).</i></p> <p><i>Note.</i>— <i>The meteorological and aeronautical information services information concerned is specified in 9.1 to 9.3 and Appendix 8 and in the Procedures for Air Navigation Services — Aeronautical Information Management (PANS-AIM, Doc 10066), 5.5, respectively.</i></p>	CV-CAR 16, 16.E.720 (b)	No Difference		
Chapter 9 Reference 9.4.3 Standard	<p>9.4.3 Where automated pre-flight information systems are used to provide for a harmonized, common point of access to meteorological information and aeronautical information services information by operators, flight crew members and other aeronautical personnel concerned, the meteorological authority concerned shall remain responsible for the quality control and quality management of meteorological information provided by means of such systems in accordance with Chapter 2, 2.2.2.</p> <p><i>Note.</i>— <i>The responsibilities relating to aeronautical information services information and the quality assurance of the information are given in Annex 15, Chapters 1, 2 and 3.</i></p>	CV-CAR 1616.E.720(c)	No Difference		



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Chapter 9 Reference 9.5.1 Standard	<p style="text-align: center;">9.5 Information for aircraft in flight</p> <p>9.5.1 Meteorological information for use by aircraft in flight shall be supplied by an aerodrome meteorological office or meteorological watch office to its associated air traffic services unit and through D-VOLMET or VOLMET broadcasts as determined by regional air navigation agreement. Meteorological information for planning by the operator for aircraft in flight shall be supplied on request, as agreed between the meteorological authority or authorities and the operator concerned.</p>	CV-CAR 1616.E.725(a),(b)	No Difference		
Chapter 9 Reference 9.5.2 Standard	<p>9.5.2 Meteorological information for use by aircraft in flight shall be supplied to air traffic services units in accordance with the specifications of Chapter 10.</p>	CV-CAR 1616.E.725(c)	No Difference		
Chapter 9 Reference 9.5.3 Standard	<p>9.5.3 Meteorological information shall be supplied through D-VOLMET or VOLMET broadcasts in accordance with the specifications of Chapter 11.</p>	CV-CAR 1616.E.725(d)	No Difference		



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Chapter 10 Reference 10.1.1 Standard	<p style="text-align: center;">CHAPTER 10. INFORMATION FOR AIR TRAFFIC SERVICES, SEARCH AND RESCUE SERVICES AND AERONAUTICAL INFORMATION SERVICES</p> <p style="text-align: center;"><i>Note.— Technical specifications and detailed criteria related to this chapter are given in Appendix 9.</i></p> <p style="text-align: center;">10.1 Information for air traffic services units</p> <p>10.1.1 The meteorological authority shall designate an aerodrome meteorological office or meteorological watch office to be associated with each air traffic services unit. The associated aerodrome meteorological office or meteorological watch office shall, after coordination with the air traffic services unit, supply, or arrange for the supply of, up-to-date meteorological information to the unit as necessary for the conduct of its functions.</p>	CV-CAR 1616.E.800CV-CAR 1616.E.805(a)	No Difference		
Chapter 10 Reference 10.1.2 Recommendation	<p>10.1.2 Recommendation.— <i>An aerodrome meteorological office should be associated with an aerodrome control tower or approach control unit for the provision of meteorological information.</i></p>	CV-CAR 1616.E.805(a)	No Difference		



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Chapter 10 Reference 10.1.3 Standard	10.1.3 A meteorological watch office shall be associated with a flight information centre or an area control centre for the provision of meteorological information.	CV-CAR 1616.E.805(b)	No Difference		
Chapter 10 Reference 10.1.4 Recommendation	10.1.4 Recommendation. — <i>Where, owing to local circumstances, it is convenient for the duties of an associated aerodrome meteorological office or meteorological watch office to be shared between two or more aerodrome meteorological offices or meteorological watch offices, the division of responsibility should be determined by the meteorological authority in consultation with the appropriate ATS authority.</i>	CV-CAR 1616.E.805(c)	No Difference		
Chapter 10 Reference 10.1.5 Standard	10.1.5 Any meteorological information requested by an air traffic services unit in connection with an aircraft emergency shall be supplied as rapidly as possible.	CV-CAR 1616.E.805(d)	No Difference		



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Chapter 10 Reference 10.2 Standard	<p>10.2 Information for search and rescue services units</p> <p>Aerodrome meteorological offices or meteorological watch offices designated by the meteorological authority in accordance with regional air navigation agreement shall supply search and rescue services units with the meteorological information they require in a form established by mutual agreement. For that purpose, the designated aerodrome meteorological office or meteorological watch office shall maintain liaison with the search and rescue services unit throughout a search and rescue operation.</p>	CV-CAR 1616.E.820(a),(b)	No Difference		
Chapter 10 Reference 10.3 Standard	<p>10.3 Information for aeronautical information services units</p> <p>The meteorological authority, in coordination with the appropriate civil aviation authority, shall arrange for the supply of up-to-date meteorological information to relevant aeronautical information services units, as necessary, for the conduct of their functions.</p>	CV-CAR 1616.E.825	No Difference		



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Chapter 11 Reference 11.1.1 Standard	<p style="text-align: center;">CHAPTER 11. REQUIREMENTS FOR AND USE OF COMMUNICATIONS</p> <p><i>Note 1.— Technical specifications and detailed criteria related to this chapter are given in Appendix 10.</i></p> <p><i>Note 2.— It is recognized that it is for each Contracting State to decide upon its own internal organization and responsibility for implementing the telecommunications facilities referred to in this chapter.</i></p> <p style="text-align: center;">11.1 Requirements for communications</p> <p>11.1.1 Suitable telecommunications facilities shall be made available to permit aerodrome meteorological offices and, as necessary, aeronautical meteorological stations to supply the required meteorological information to air traffic services units on the aerodromes for which those offices and stations are responsible, and in particular to aerodrome control towers, approach control units and the aeronautical telecommunications stations serving these aerodromes.</p>	CV-CAR 1616.E.900CV-CAR 1616.E.905(a)	No Difference		



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Chapter 11 Reference 11.1.2 Standard	11.1.2 Suitable telecommunications facilities shall be made available to permit meteorological watch offices to supply the required meteorological information to air traffic services and search and rescue services units in respect of the flight information regions, control areas and search and rescue regions for which those offices are responsible, and in particular to flight information centres, area control centres and rescue coordination centres and the associated aeronautical telecommunications stations.	CV-CAR 1616.E.905(b)	No Difference		
Chapter 11 Reference 11.1.3 Standard	11.1.3 Suitable telecommunications facilities shall be made available to permit world area forecast centres to supply the required world area forecast system products to aerodrome meteorological offices, meteorological authorities and other users.	CV-CAR 1616.E.905(c)	No Difference		
Chapter 11 Reference 11.1.4 Standard	11.1.4 Telecommunications facilities between aerodrome meteorological offices and, as necessary, aeronautical meteorological stations and aerodrome control towers or approach control units shall permit communications by direct speech, the speed with which the communications can be established being such that the required points may normally be contacted within approximately 15 seconds.	CV-CAR 1616.E.905(d)	No Difference		



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Chapter 11 Reference 11.1.5 Recommendation	<p>11.1.5 Recommendation.— <i>Telecommunications facilities between aerodrome meteorological offices or meteorological watch offices and flight information centres, area control centres, rescue coordination centres and aeronautical telecommunications stations should permit:</i></p> <p>a) <i>communications by direct speech, the speed with which the communications can be established being such that the required points may normally be contacted within approximately 15 seconds; and</i></p> <p>b) <i>printed communications, when a record is required by the recipients; the message transit time should not exceed 5 minutes.</i></p> <p><i>Note.— In 11.1.4 and 11.1.5, “approximately 15 seconds” refers to telephony communications involving switchboard operation and “5 minutes” refers to printed communications involving retransmission.</i></p>	CV-CAR 1616.E.905(e)	No Difference		
Chapter 11 Reference 11.1.6 Recommendation	<p>11.1.6 Recommendation.— <i>The telecommunications facilities required in accordance with 11.1.4 and 11.1.5 should be supplemented, as and where necessary, by other forms of visual or audio communications, for example, closed-circuit television or separate information processing systems.</i></p>	CV-CAR 1616.E.905(f)	No Difference		
Chapter 11 Reference 11.1.7 Recommendation	<p>11.1.7 Recommendation.— <i>As agreed between the meteorological authority and the operators concerned, provision should be made to enable operators to establish suitable telecommunications facilities for obtaining meteorological information from aerodrome meteorological offices or other appropriate sources.</i></p>	CV-CAR 1616.E.905(g)	No Difference		



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Chapter 11 Reference 11.1.8 Standard	11.1.8 Suitable telecommunications facilities shall be made available to permit meteorological offices to exchange operational meteorological information with other meteorological offices.	CV-CAR 1616.E.905(h)	No Difference		
Chapter 11 Reference 11.1.9 Recommendation	<p>11.1.9 Recommendation.— <i>The telecommunications facilities used for the exchange of operational meteorological information should be the aeronautical fixed service or, for the exchange of non-time critical operational meteorological information, the public Internet, subject to availability, satisfactory operation and bilateral/multilateral and/or regional air navigation agreements.</i></p> <p><i>Note 1.— Aeronautical fixed service Internet-based services, operated by the world area forecast centres, providing for global coverage are used to support the global exchanges of operational meteorological information.</i></p> <p><i>Note 2.— Guidance material on non-time-critical operational meteorological information and relevant aspects of the public Internet is provided in the Guidelines on the Use of the Public Internet for Aeronautical Applications (Doc 9855).</i></p>	CV-CAR 1616.E.905(i)	No Difference		



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Chapter 11 Reference 11.2 Standard	<p>11.2 Use of aeronautical fixed service communications and the public Internet — meteorological bulletins</p> <p>Meteorological bulletins containing operational meteorological information to be transmitted via the aeronautical fixed service or the public Internet shall be originated by the appropriate meteorological office or aeronautical meteorological station.</p> <p><i>Note.— Meteorological bulletins containing operational meteorological information authorized for transmission via the aeronautical fixed service are listed in Annex 10, Volume II, Chapter 4, together with the relevant priorities and priority indicators.</i></p>	CV-CAR 1616.E.910	No Difference		
Chapter 11 Reference 11.3.0.1 Recommendation	<p>11.3 Use of aeronautical fixed service communications — world area forecast system products</p> <p>Recommendation.— <i>World area forecast system products in digital form should be transmitted using binary data communications techniques. The method and channels used for the dissemination of the products should be as determined by regional air navigation agreement.</i></p>	CV-CAR 1616.E.915	No Difference		
Chapter 11 Reference 11.4 Standard	<p>11.4 Use of aeronautical mobile service communications</p> <p>The content and format of meteorological information transmitted to aircraft and by aircraft shall be consistent with the provisions of this Annex.</p>	CV-CAR 1616.E.920	No Difference		



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Chapter 11 Reference 11.5 Standard	<p>11.5 Use of aeronautical data link service — contents of D-VOLMET</p> <p>D-VOLMET shall contain current METAR and SPECI, together with trend forecasts where available, TAF and SIGMET, special air-reports not covered by a SIGMET and, where available, AIRMET.</p> <p><i>Note.— The requirement to provide METAR and SPECI may be met by the data link-flight information service (D-FIS) application entitled “Data link-aerodrome routine meteorological report (D-METAR) service”; the requirement to provide TAF may be met by the D-FIS application entitled “Data link-aerodrome forecast (D-TAF) service”; and the requirement to provide SIGMET and AIRMET messages may be met by the D-FIS application entitled “Data link-SIGMET (D-SIGMET) service”. The details of these data link services are specified in the Manual of Air Traffic Services Data Link Applications (Doc 9694).</i></p>	CV-CAR 1616.E.925	No Difference		
Chapter 11 Reference 11.6.1 Standard	<p>11.6 Use of aeronautical broadcasting service — contents of VOLMET broadcasts</p> <p>11.6.1 Continuous VOLMET broadcasts, normally on very high frequencies (VHF), shall contain current METAR and SPECI, together with trend forecasts where available.</p>	CV-CAR 1616.E.930(a)	No Difference		



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Chapter 11 Reference 11.6.2 Standard	11.6.2 Scheduled VOLMET broadcasts, normally on high frequencies (HF), shall contain current METAR and SPECI, together with trend forecasts where available and, where so determined by regional air navigation agreement, TAF and SIGMET.	CV-CAR 1616.E.930(b)	No Difference		

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