International Civil Aviation Organization
CAR/SAM Regional Planning and Implementation Group (GREPECAS)
Ninth Meeting of the GREPECAS Aeronautical Meteorology Subgroup (AERMETSG/9)
Lima, Perú, 23 to 27 June 2008

Agenda Item 2: Implementation of the World Area Forecast System (WAFS)

CHANGES AND IMPROVEMENTS TO WAFS FORECASTS

(Presented by United States of America)

Summary

The Fourth Meeting of the World Area Forecast System Operations Group (WAFSOPSG/4) addressed the development work of WAFS forecasts done by the WAFS Provider States. This paper summarizes the upcoming improvements and associated changes to WAFS forecasts, including additional products, formats, guidelines, as well as the workshop and training seminars to be provided.

1. Introduction

1.1 The Fourth Meeting of the World Area Forecast System (WAFS) Operations Group (WAFSOPSG/4) addressed the development work of WAFS forecasts done by the WAFS Provider States (United Kingdom and United States). This development work was tasked by the WAFSOPSG at the First Meeting (WAFSOPSG/1), with progress, trial forecasts, and refined requirements presented and approved at the Second and Third Meetings (WAFSOPSG/2 and 3).

1.2 The development work primarily focused on providing Significant Weather (SIGWX) Forecast elements of icing (ICE), turbulence (TURB), and convection (CB) forecasts in gridded format with increased temporal resolution.

2. Discussion

2.1 Global forecasts of ICE/TURB/CB

2.1.1 Global forecasts of ICE/TURB/CB in a gridded format have been produced by the WAFS Provider States, i.e. World Area Forecast Centers (WAFCs) for over a year. These forecasts are operational trials, and have been available on the SADIS FTP, as well as the Internet at: http://aviationweather.gov/testbed/globalgrids.

2.2 Increased Temporal and Spatial Resolution of WAFS Forecasts

2.2.1 Spatial resolution for all WAFS forecasts will increase from the current WAFS thinned grid scale to a resolution of 1.25 degree unthinned grid.

2.2.2 WAFCs will add three additional upper wind and temperature forecasts at flight levels (FL), FL 270 (350 hPa), FL 320 (275 hPa) and FL 360 (225 hPa).

2.2.3 Temporal resolution of WAFS forecast will increase from 6 to 3 hours.

2.2.4 Perhaps the greatest improvement in the new WAFS forecasts is the introduction of SIGWX forecasts of ICE/TURB/CB that will match the corresponding temporal resolution of upper air and temperature forecasts. This increase provides users with the latest forecasts valid for operations at all timescales; something which is not currently provided by today's WAFS SIGWX forecasts. New WAFS forecasts of ICE/TURB/CB will be valid at three hour time intervals, from T+6, 9, 12, 15, 18, 21, 24, 27, 30, 33 and 36 hours from model initialization time (T). See Appendix A for samples of the new products

2.3 Format of New WAFS Forecasts

2.3.1 The new forecasts described in section 2.2 will not be available in the current GRIB1 format. WAFS forecast will begin a transition to GRIB2 format beginning in September 2009. The forecasts described in section 2.2 are scheduled to be available in GRIB2 format beginning September 2009 via WAFS ftp service, and over ISCS and SADIS satellite broadcasts at a future date that will be determined at the Fifth Meeting of the WAFSOPSG (WAFSOPSG/5). New SIGWX forecasts of ICE/TURB/CB will be operational via the Internet pending approval at WAFSOPSG/5.

2.3.2 WAFS long-term plans are for all WAFS forecasts currently provided in GRIB1 format to continue in parallel with the new GRIB2 format until November 2013. Continuation of SIGWX forecasts in BUFR and PNG formats will be discussed at upcoming WAFSOPSG meetings.

2.3.3 WAFS Provider States have been tasked by the WAFSOPSG to develop derivatives of the new SIGWX forecasts which will be suitable for Flight Documentation, and provide them to WAFSOPSG/5.

2.3.4 WAFS Provider States were also tasked by the WAFSOPSG to develop a web-based distribution of WAFS forecasts by December 2009. The web-based interface would be designed to be easily accessible, user friendly, and allow users the freedom to visualize a selection of products within the T+6 to T+36 time frames at 3-hourly intervals and would replace the provisions of WAFS SIGWX forecasts in portable network graphics (PNG) chart form.

2.4 Use of New WAFS SIGWX Forecast

2.4.1 WAFSOPSG/4 approved guidelines for the use of new SIGWX forecasts. Appendix B lists these guidelines (taken from Appendix E of the WAFSOPSG/4 Final Report).

2.5 Workshops and Training for New WAFS Forecasts

2.5.1 WAFS Provider States, in coordination with ICAO and WMO, will convene a two-day workshop on the use and visualization of new gridded WAFS forecasts in September 2009. This

workshop will be held during the week of the WAFSOPSG/5 Meeting at the ICAO EUR/NAT Office, Paris.

2.5.2 The WAFS Provider State – United States will provide training to CAR/SAM States on the use of new WAFS Forecast. It is expected that training will be provided in the form of computer based training and be provided beginning in 2010 or 2011. WAFC Washington will work with States on as needed bases with the computer based training.

3. Recommendation

3.1 The subgroup is invited to discuss the proposed draft conclusion to further promote training in the CAR/SAM Region.

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CONCLUSION 09/XX TRAINING FOR CAR/SAM STATES REGARDING THE DETAILS AND USE OF NEW WAFS FORECAST, SPECIFICALLY, ICE/TURB/CB DERIVED FROM GRIB2 FORMAT DATA

a) WAFC Washington will provide computer based training to CAR/SAM on the application and usage of new WAFS forecasts issued by the WAFS Provider States. This training will be provided beginning in 2010 or 2011.

b) WAFC Washington will assist those States, as needed in English, on the computer based training via telecommunications.

4. Action

4.1 The group is invited to note the information contained in this paper.

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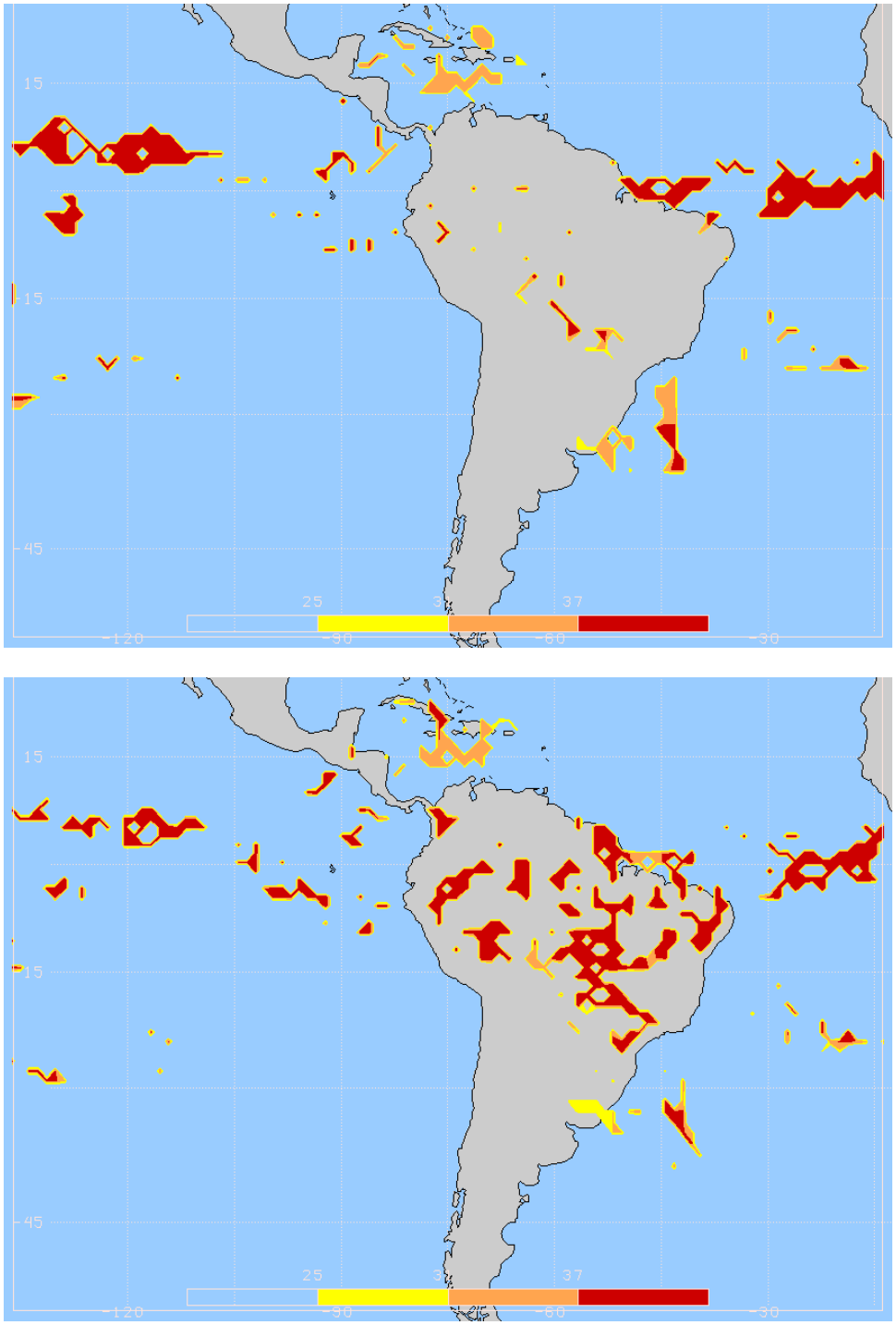
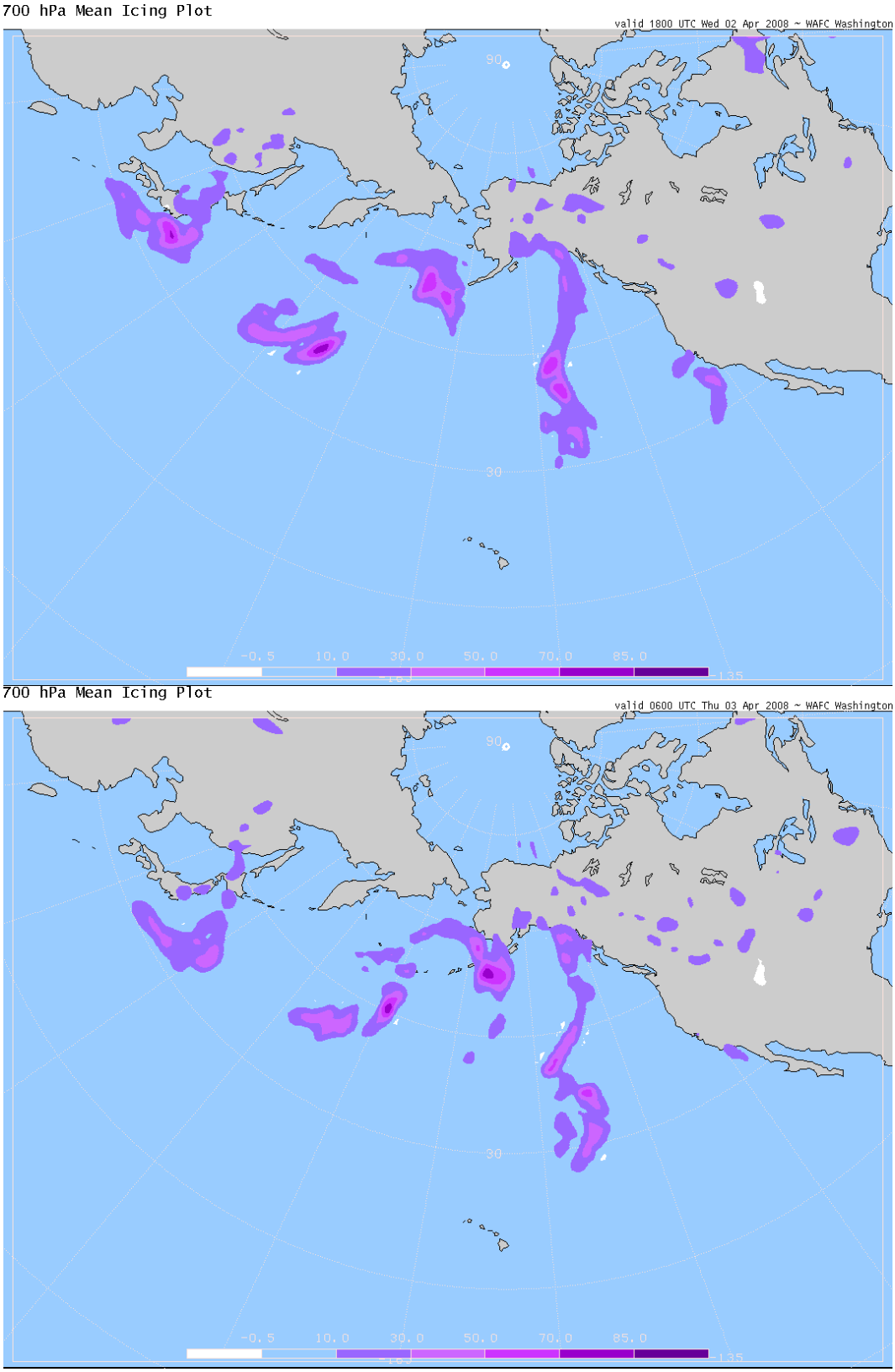
APPENDIX A

The following are examples of trial products of convection, icing potential, and clear-air-turbulence. These trials do not represent any final visualization scheme of the WAFS SIGWX forecast; rather they are first version trials.



Samples SIGWX forecast of convection, contoured with heights of CB tops, valid at 6 and 12 after model time.



Sample SIGWX forecasts of icing at 700 hPa (FL100) valid at 12 hours (above) and 24 hours (below) after model time.

APPENDIX B

Guidelines for the Use of Gridded Forecasts of Turbulence, Icing, and CB Clouds (taken from WAFSOPSG/4 Final Report Appendix E)

1) Gridded ICE/TURB/CB will be stand alone products similar to today's WAFS upper wind and air temperature forecasts.

2) All gridded ICE/TURB/CB should be considered as flight planning information for flight documentation.

3) Gridded ICE/TURB/CB valid at T+6 hours are not advisories or warnings, such as SIGMETs or AIRMETs, and are not to be considered as a replacement or amendment to any such advisories or warnings.

4) Gridded ICE/TURB/CB will be available in 3 hour time steps, from T+6 to T+36. The recommended period of use will be 1 hour 30 minutes before and after each time step. For example, a 0000UTC T+15 hour gridded ICE/TURB/CB product valid at 1500 UTC would be appropriately used for flight information from 1330 UTC to 1630 UTC. Flight documentation for 1700 UTC would be provided in the 0000UTC T+18 hour gridded ICE/TURB/CB product.

5) With respect to flight documentation, newly issued gridded ICE/TURB/CB automatically updates and cancels the corresponding forecast issued six hours earlier.

Note. - Users may continue to use forecaster-produced SIGWX for flight documentation, but should be advised that only the most recently issued T+24 hour SIGWX was produced using the latest computer model run, and that SIGWX forecasts issued six hours earlier were produced from an earlier computer model run.

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