

RE-PROCESSING OF ATMOSPHERIC MOTION VECTORS

This document describes the status of re-processing of Atmospheric Motion Vectors at MSC/JMA for a long-range re-analysis project of atmosphere in Japan.

No action is required on this subject.

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1 INTRODUCTION

It is important to understand the factors of global climate change, and to monitor the global climate. Long-range re-analysis products are useful for various research activities in climate system studies, and as boundary condition of an ocean general circulation model or input for a chemical transport model. In early 1990s, the projects of long-range re-analysis for global climate change were started in Europe and the United States.

JMA also started to conduct a research project of long-range re-analysis of global atmosphere, called the "Japanese Re-Analysis 25 years (JRA-25)", in cooperation with the Central Research Institute of Electric Power Industry (CRIEPI).

Meteorological Satellite Center (MSC) decided to re-process the Atmospheric Motion Vectors (AMVs) with the archived GMS VISSR data and to provide the JRA-25 project with the re-processed AMVs.

The plan of JRA-25 and reprocessing of AMV were reported in the 29th CGMS meeting. This document describes the progress of the reprocessing of AMV in MSC.

2 STATUS OF JRA-25 PROJECT

The JRA-25 project started in the April 2001 and will be completed in March 2006. In this 5-year period, the re-analysis will be performed using JMA operational Numerical Weather Prediction (NWP) and assimilation system. The period of re-analysis is for 26 years from 1979 to 2004 taking into account the availability of the satellite data because the re-analysis considerably depends on the satellite data.

The preparation of the NWP model, assimilation system and observation data including AMV is being proceeding. Re-analyzing process foresees to start in the first quarter in the next year. The further information on the JRA-25 project is given at the homepage (<http://www.jreap.org>).

JMA and CRIEPI have organized an evaluation group of the JRA-25 project, composed of researchers in climatology. Researchers who want to use reanalyzed data in a non-profitable purpose can join the evaluation group. They will be able to get the data through the web page set up to provide the reanalysis data.

3 SATELLITE DATA FOR THE PROJECT

Meteorological Satellite Center (MSC) decided to re-process the Atmospheric Motion Vectors (AMVs) with the archived GMS VISSR data and to provide the JRA-25 project with the re-processed AMVs.

JRA25 working group has also re-assigned the heights of AMVs archived in MSC in the period

from 1980 to February 1987 to get the best height for operationally produced and archived AMVs. Because the satellite imagery had lost in the period and re-processing is impossible, the project tries to get better wind vectors out of archived vectors.

The working group expects ECMWF, NCEP and NESDIS provide the products of satellite data such as TOVS and AMV data sets

4 STATUS OF RE-PROCESSING OF AMV IN MSC

MSC is planning to derive the high-density winds with high accuracy in the re-processing from the archived GMS VISSR data during the period from March 1987 in which the archived GMS VISSR data are available. The re-processing will spend two years from 2002 to March 2004.

The hardware for the re-processing of AMV has been prepared on the end of March 2002: Computer programs for the re-processing are the ones being developed for high-density atmospheric motion vectors (refer to the JPN-WP-17). The ERA-15 data (1979-1993) of ECMWF are to be used for the height assignment and the quality control with the EUMETSAT Quality Indicator (QI). The development of requisite computer programs was completed in and the sample data set for the period of 1987 to 1990 was provided to the working group.

The sample data set will be assimilated in the preliminary experiment of JRA 25. MSC plans to revise the presses based on the feedback from the experiments and its further research. The updated AMV will start to be calculated and provided to the working group from the beginning of the year 2003.