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## **Status of Atmospheric Motion Vectors for FY2C Meteorological Satellite**

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Summary and purpose of paper  
This paper introduces the status of AMVs in CMA.

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## **Status of Atmospheric Motion Vectors for FY-2C Meteorological Satellite**

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FY-2C AMVs are in operation and have been distributed in China.

The major works at FY-2C AMV derivation are as follows:

- 1) Image navigation quality is extremely important for AMV derivation. Images from FY-2C are transferred to nominal ones before products derivation is made.
- 2) Inter calibrations between FY-2C and NOAA observations are performed. Infrared and water vapor channel calibration are improved and compatible with NOAA observations.
- 3) Height assignment procedure is improved. Opaque cloud radiation is calculated with NWP data by using radiation model. Original assumption on same IR and WV brightness temperature for opaque cloud is removed.
- 4) Quality indexes are calculated with CMA's numerical prediction model output.
- 5) A stepwise search procedure is adopted. Search area does not rely on NWP results.
- 6) The absolute maximum and secondary peaks (if present) at two successive image pairs are used to identify potential displacement vectors.
- 7) Sub-pixel optimization is made in search procedure.
- 8) In height assignment component, distinction between high and low clouds is made before height adjustment by correlation between the IR and WV matching templates.
- 9) Quality control is an integral part of the processing. Time consistency examination is performed immediately after tracer tracking; horizontal consistency examination and height adjustment are performed immediately after height assignment. Tracers failed in the examinations are eliminated.
- 10) BURF coding is produced.

The FY-2C AMVs are compared with Radiosonde data. The comparison results are shown in Table 1 and 2.

Table 1. Comparison between FY2C AMVs with Radiosonde data for July 2005 (m/s)

Comparison Items	IR High Level	IR Middle Level	IR Low Level
No. of Samples	496098	43196	37036
Mean Speed	26.13556	12.94238	8.937048
Mean Bias	1. 179943	1. 683535	3. 371368
Absolute Mean Difference	8. 675443	9. 647792	5. 967437
RMS Difference	11. 869750	12. 894510	8. 551648

Table 2. Comparison between FY2C AMVs with Radiosonde data for August 2005 (m/s)

Comparison Items	IR High Level	IR Middle Level	IR Low Level
No. of Samples	485407	55683	36856
Mean Speed	27.35989	13.7	8.74
Mean Bias	0. 90725	0.3268	2.889
Absolute Mean Difference	8.50443	9.353	5.7523
RMS Difference	11.656	12.507	8.229

The overlap display of AMVs and images has been widely used in the daily forecast in local weather observatory and will be shown in the discussion.