

PANEL DISCUSSION

OPERATIONAL IMPROVEMENTS

Chairperson: John Le Marshall

This session, devoted to a review of present practices used in the generation and application of operational cloud drift winds, involved both intense and focused discussions, and is summarised below. Also given are a number of related recommendations directed towards operational improvements, including some related to supporting research. The session also reviewed the status of recommendations made at the last meeting.

It was noted that there was a strong spirit of cooperation among operational producers of winds. In particular, there has been considerable cooperation between NESDIS and EUMETSAT with regard to wind vector processing.

It was anticipated that this increased cooperation would extend to other operational producers and also to new operational producers of winds.

REVIEW OF LAST MEETING'S RECOMMENDATIONS:

The recommendations from the last meeting were examined. Although there had been significant advances in many areas, it was noted that the need still exists for a more formal group definition and terms of reference.

AREAS OF CONSIDERATION:

Operational improvements were considered in terms of the following areas:

1. INSTRUMENTS
2. INSTRUMENT OPERATION
3. WIND VECTOR DERIVATION
4. WIND PRODUCTS
5. RESEARCH

1. INSTRUMENTS

a) Channels

Channels usefully exploited for geostationary observation may be cryptically denoted as:

VISIBLE
WATER VAPOUR
SPLIT WINDOW
CO₂ ABSORPTION

Recommendation: Noting that the use of a CO₂ absorption channel was of significant benefit in height assignment, it was strongly recommended that a 13 μ m CO₂ absorption channel be included (where possible) on future spacecraft with a CMW mission.

b) Resolution

Horizontal resolution, signal to noise (S/N) and operational mode of operation are all linked. It would appear the S/N available will soon allow higher temporal and spatial resolution imaging with a resultant increase in vector yield and quality.

Recommendation: That operators use the future gains in S/N to improve the temporal and spatial resolution of imaging in a way that improves the yield and quality of operational vectors.

Operational producers of wind vectors are also encouraged to explore techniques for image sharpening (e.g. deconvolution) to mitigate the effects of edge smearing (e.g. due to MTF).

2. INSTRUMENT OPERATION

Introduction of Rapid Scans where possible

There is evidence which indicates that 15-minute rapid scans can improve the accuracy and yield of vectors (e.g. JMA routine typhoon observations every 15 minutes) and, as a result, this group endorses the routine use of rapid scans for the production of motion vector winds.

Recommendation: Being cognisant of the advantages of the routine use of rapid scans, this group recommends that CGMS be asked to explore with the satellite operators the feasibility of introducing 15-minute rapid scans on a routine basis for use in motion vector production.

Note was also made of the desirability of future imagers and sounders being operated in a way to allow the sounder to assist in cloud height assignment.

3. WIND VECTOR DETERMINATION

The benefits of rapid scans were again noted with regard to target selection and wind tracking. Promising results with wind tracking using correlation-relaxation were also noted. The increasing commonality of instrumentation (WV,IR,VIS channels) and resulting increased cooperation in the determination of optimal cloud height estimation methods was also discussed.

Recommendation: Recent exchange of information between operational centres on wind vector determination methods has proved to be of great benefit and as a result it is recommended that this information be made freely available in future to (new) users on request.

4. WIND PRODUCTS

Concern was expressed at the meeting that vectors flagged by producers as being of reduced quality and as a result not distributed on the GTS, may still be very useful, particularly in data sparse regions.

Recommendation: The group recommended that the dissemination of quality control (QC) rejected winds be undertaken, and that they be distributed with an appropriate quality flag and ancillary data to facilitate their use in synoptic and NWP applications.

The group was aware that this recommendation would require careful implementation and the work outside this meeting of a small subgroup. It was also noted that all vectors should be distributed with quality flags.

The group also noted the advantages of the generation and dissemination of hourly winds.

5. RESEARCH

Operational improvements both in cloud motion vector determination and application are clearly dependent on supporting research and development. Being conscious of this, the following recommendations were tendered.

Recommendations:

1. The operational use of multi-spectral full resolution data should be investigated, noting their utility in cloud tracking and height assignment.
2. New forecast-independent methods of tracking tracers should be investigated.

3. The utility of the development of a weighting function to be associated with WV winds was also noted and should be further investigated.
4. The development of geometric methods as an aid to improving height assignment is recommended.
5. It is recommended that the generation of motion vectors over polar regions be undertaken and their utility tested.
6. It is recommended that studies of time-continuous assimilation be undertaken with mesoscale winds. For these studies it is recommended that producers provide hourly winds.
7. More research into the optimal use of forecast first guess fields in wind determination is required, together with consideration of provision of a clear description of the products generated. Their quality should be checked by forecast impact studies.
8. The use of WV winds for climate monitoring needs further investigation and should be examined in the context of the present pathfinder study.
9. Effort should be expended in supporting research directed toward attaining the WMO accuracy goal of 1-2m/s.

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