Brief Introduction to Fengyun-3E

--An early morning orbit mission

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National Satellite Meteorological Center, CMA
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Background

“WMO VISION FOR THE GOS IN 2025”
-- Optimizing the current operational polar-orbiting system

Recommendation 39.01: CGMS agencies are invited to assess the possibility of implementing the mission with sounding capabilities in early morning orbit.

Relative actions and recommendations are also from ET-SAT-7 in April 2012 and CBS-15 in Sept. 2012.

CMA indicated its willingness to investigate the possibility of flying the mission with sounding capabilities in the early-morning orbit in order to have a better distribution of atmospheric sounding system over the planned 3 orbits in WMO EC-64 in 2012.
Gap exists in current operational polar-orbiting constellation without E.M.
Tri-Orbital configuration:  Metop Morning +NPP Afternoon+FY-3 Early Morning

Recognizing that global even distribution of sounding data is of great significance for the 6 hour NWP assimilation window, one approach is to constitute a three orbital fleet including Metop（Mid. Morning）+ NPP(Afternoon) +FY-3(Early Morning).
CMA Consideration on early-morning orbit satellite presented at CGMS 40 during 5-11 Nov. 2012 in Lugano, Switzerland.

CMA stated that:

- FY-3D has been under manufacture, no chance to make it changed for Early Morning orbit.
- FY-3E is the possible opportunity for CMA to fly early morning orbit before 2020.

<table>
<thead>
<tr>
<th>FY-3 OPERATIONAL SATELLITE INSTRUMENTS</th>
<th>FY-3C</th>
<th>FY-3D</th>
<th>FY-3E</th>
<th>FY-3F</th>
</tr>
</thead>
<tbody>
<tr>
<td>MERSI – Medium Resolution Spectral Imager (I, II)</td>
<td>(I)</td>
<td>(II)</td>
<td>(II)</td>
<td>(II)</td>
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<tr>
<td>MWTS – Microwave Temperature Sounder (II)</td>
<td>✓</td>
<td>✓</td>
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<tr>
<td>MWHS – Microwave Humidity Sounder (II)</td>
<td>✓</td>
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<tr>
<td>MWRI – Microwave Radiation Imager</td>
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<td>WindRAD - Wind Radar</td>
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<tr>
<td>GAS - Greenhouse Gases Absorption Spectrometer</td>
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<tr>
<td>HIRAS – Hyper spectral Infrared Atmospheric Sounder</td>
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<tr>
<td>OMS – Ozone Mapping Spectrometer</td>
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<tr>
<td>GNOS – GNSS Occultation Sounder</td>
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<tr>
<td>ERM – Earth Radiation Measurement (I, II)</td>
<td>(I)</td>
<td>(II)</td>
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<td>SIM – Solar irritation Monitor (I, II)</td>
<td>(I)</td>
<td>(II)</td>
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<td>SES – Space Environment Suite</td>
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<tr>
<td>IRAS – Infrared Atmospheric Sounder</td>
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<td>VIRR – visible and Infrared Radiometer</td>
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<td>SBUS – Solar Backscattered Ultraviolet Sounder</td>
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<td>TOU – Total Ozone Unit</td>
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</table>
1. User Workshop
   • Beijing, March 11, 2013
   • CMA Headquarter, NWPC, NNWPC, NCC, CAMS
2. Discussions on FY-3E Engineering Feasibility Study
   • Shanghai, Nov. 8, 2012
   • Shanghai, Jan. 10, 2013
   • Beijing, March 12, 2013
   • SAST/CAST
3. Discussions on Financial Support
   • Jan., 2013
   • CMA, CNSA, NDRC
4. WMO Tiger Team Meeting
   • Beijing, 25-26 April. 2013
5. Formal commitment on FY-3E from CMA administrator Dr. Zheng
   • Geneva, WMO EC-65th, 2013
6. Approval of FY-3E Mission Requirement by CMA in 2014
Tiger Team Meeting
April 25 ~ 26, 2013, Beijing
Assessment of the benefits of a satellite mission in an early morning orbit

Report from the WMO-CGMS Tiger Team

April 2013

1. BENEFITS OF AN EARLY MORNING MISSION FOR NWP

2. BENEFITS FOR OTHER APPLICATIONS
   - Diurnal cycle and daily operations schedule
   - Tropical cyclones and other severe events
   - Climate monitoring
   - Air quality
   - Solar observations
Conclusion:

- CMA appreciated the supports from CGMS and WMO, especially the Tiger Team, on the benefit assessment of the E.M. orbit;
- CMA has decided to redeploy FY-3E to an early morning orbit and calls on support from WMO, CGMS members and satellite operators to reach this objective.
- International efforts are expected in the course of the development phase of the FY-3E early morning mission.
- FY-3E is now under manufacture, and is expected to be launched in 2019.
Thank you!