Radiative Transfer and Surface Property Modeling Working Group Report

Louis Garand, Environment Canada

Paul van Delst, NCEP/EMC/SAIC

2) Tom Kleespies to document the various cloud droplet size distributions used for determining effective radius values.

- Tom stopped by and had a chat. Will document on RTSP-WG website post ITSC17

3) Paul van Delst to document available cloud profile datasets.

- Only dataset identified so far (because we're starting to use it for CRTM validation) is that of the C3VP project. See http://c3vp.org.

4) Paul van Delst to add the information on IR SRF and MW frequencies for as many instruments as possible (current and historical) on the RTSP-WG website.

- Incomplete. At the JCSDA we are in the midst of changing our SRF datafile format to accommodate microwave sensors also and the format has only just been finalised in the past month or so. We haven't yet converted all of our datafiles over to the new format. This should be done by end of this summer.

5) Paul van Delst to continue working with IPO to obtain CrIS instrument response information for US NWP centres, and determine the path/timeline for dissemination by IPO of the information to non-US NWP centres.

- The CrIS instrument characterisation ATBD has been un-ITAR'd so it is available to non-US folks. Lihang Zhao (IPO) confirmed. Will post to RTSP-WG website after ITSC-17 (action #6).

Action Items from ITSC-16 (2)

7) Paul van Delst to check with Walter Wolf (NOAA/NESDIS) on the status of CrIS sample datasets and data formats.

- The simulated CrIS BUFR data files have been available continuously in near real time via anonymous ftp since June 2009 at: ftp://ftp2.orbit.nesdis.noaa.gov/smcd/tking/CrIS_BUFR

9) Roger Saunders to contact the Korean Aerospace Research Institute (KARI) to obtain the instrument spectral response information for the COMS imager (scheduled launch late 2009) when it becomes available.

- COMS SRFs and RTTOV coefficients available from Roger upon request.

10) Alexander Uspensky to notify the RTSP-WG how to obtain the Electro-L (scheduled launch 2008) MSU-GS SRFs and the Meteor-M MTZVA frequencies when they become publicly available. Electro-L is scheduled to launch 2008; Meteor-M1 is scheduled to launch 2008, Meteor-M2 in 2010.

- RTTOV coefficients and filter responses are now available for the METEOR-M1 MSUM-R infrared imager. Available from Roger Saunders upon request.

Action Items from ITSC-16 (3)

12) As per CWG Action item, Paul van Delst to make available results/discussions with NRL SSMIS investigators on how to best use the provided SSMIS bandpass information.

- During 2009, the focus at JCSDA on microwave instrument bandpass information shifted towards NPP ATMS. Discussions and work originated from the IPO SOAT meetings that led to investigations of the radiometric impact of different sets of measured ATMS spectral response functions. Lessons learned from this work, thanks to Steve Swadley and Gene Poe at NRL, can be similarly applied to the SSMIS bandpass information we have. Will post data when SRF data format transfer is complete.

13) Paul van Delst to make available on the RTSP-WG webpage references and/or links to the SSU and VTPR work described in report.

- Work done by Q. Liu (NESDIS/Dell) and Y. Chen (NESDIS/CIRA) have led to better characterisation of the SSU instrument along with an SSU model in the CRTM:
    - Liu, Q., and F. Weng, 2009: Recent stratospheric temperature observed from satellite measurements, SOLA, 5, 53-56, doi:10.2151/sola.2009-014.
    - Chen, Y., Y. Han, Q. Liu, P. van Delst, and F. Weng : A Fast Radiative Transfer Model for Stratospheric Sounding Unit Channels, submitted to JGR.
- CRTM coefficients for the VTPR instrument using available SRF data (scanned from written text by T. Kleespies) were generated. Need to follow up with the reanalysis people at NCEP to determine how useful the model was.

15) Roger Saunders to provide a link to the CAVIAR results to be posted on the RTSP-WG website.

- See http://www.met.reading.ac.uk/caviar/water_continuum.html for all the latest results. Stuart Newman will address this at the meeting.

17) Paul van Delst to investigate a common format for optical properties data that will be made available on the RTSP-WG website.

- Current CRTM format for clouds (and aerosols) as starting point?

```
TYPE :: CloudCoeff_type
  ! Array dimensions
  ...
END TYPE CloudCoeff_type
```

Action Items from ITSC-16 (5)

18) Yong Han to provide information and reference about the results from Yong Chen's study regarding the effect of spatial inhomogeniety when comparing cloudy calculations and observations. To be posted on the RTSP-WG website.

- Chen, Y., F. Weng, Y. Han, and Q. Liu, 2008: Validation of the Community Radiative Transfer Model (CRTM) by using CloudSat data. J. Geophys. Res., 113, D00A03, doi:10.1029/2007JD009561.

20) Roger Saunders (MetOffice), Ben Ruston (NRL), Marco Matricardi (ECMWF), Louis Garand (Environment Canada), Gang Ma (for NMC) and Paul van Delst (NCEP/EMC) to provide documentation of methodologies used in NWP centres to speed up the assimilation of radiances and quality control (for example parallel processing strategy, OpenMP, number of profiles per call, geographical separation of the data etc.). Specify any machine-dependent characteristics.

- RogerS: This is a rather wide ranging action. One obvious development here since the last meeting is the capability to simulate PCs for AIRS and IASI radiances allowing large numbers of channels to be simulated more efficiently. See Marco Matricardi's talk.

Action Items from ITSC-16 (6)

21) Roger Saunders (MetOffice), Ben Ruston (NRL), Marco Matricardi (ECMWF), Louis Garand (Environment Canada), Gang Ma (for NMC), and Paul van Delst (NCEP/EMC) to provide documentation of methodologies used in NWP centres to convert layer atmospheric state variables to level values.

- RogerS: The level to layering conversion methodology at the Met Office just uses a linear interpolation at present in the NWP model code to convert layer quantities to level quantities input to RTTOV. This is being revisited with the move to input model levels directly into RTTOV.
- PaulV: Contacted modeling people at EMC.

22) Following Action RTSP-17, Paul van Delst will make available on the RTSP-WG website, optical property data for non-spherical particles used at the JCSDA, as well as any supplied by other attendee's organisations.

- Quanhua Liu (STAR/Dell Perot) and David Groff (EMC/SAIC) are working to put the data used at JCSDA (from Ping Yang's work at Texas A&M) on the CRTM ftp site. Current JCSDA datafile format will be used… but can change as necessary.

23) Pascal Brunel to provide the TRATTORIA-2008 workshop summary when it becomes available for inclusion on the RTSP-WG website.

- Pascal delivered workshop summary via CD (from Thierry Phulpin). Co-chairs (i.e. PaulV) to upload to RTSP-WG website.

Procedural Issues

- **Status: accepted** (4 matches)

Ticket	Summary	Owner	Type	Priority ▲	Component	Version
#117	Action RTSP-3	paul.vandelst@noaa.gov	other	major	other	
#118	Action RTSP-4	paul.vandelst@noaa.gov	other	major	other	
#119	Action RTSP-5	paul.vandelst@noaa.gov	other	major	other	
#120	Action RTSP-6	paul.vandelst@noaa.gov	other	major	other	

- **Status: new** (22 matches)

Ticket	Summary	Owner	Type	Priority ▲	Component	Version
#115	Action RTSP-1		other	major	other	
#116	Action RTSP-2		other	major	other	
#121	Action RTSP-7		other	major	other	
#122	Action RTSP-8		other	major	other	
#123	Action RTSP-9		other	major	other	
#124	Action RTSP-10		other	major	other	
#125	Action RTSP-11		other	major	other	
#126	Action RTSP-12		other	major	other	
#127	Action RTSP-13		other	major	other	
#128	Action RTSP-14		other	major	other	
#129	Action RTSP-15		other	major	other	
#130	Action RTSP-16		other	major	other	
#131	Action RTSP-17		other	major	other	
#132	Action RTSP-18		other	major	other	
#133	Action RTSP-19		other	major	other	
#134	Action RTSP-20		other	major	other	
#135	Action RTSP-21		other	major	other	
#136	Action RTSP-22		other	major	other	
#137	Action RTSP-23		other	major	other	
#138	Action RTSP-24		other	major	other	

Done

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