RTTOV user survey 2017

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Scope and background

A user survey was sent to RTTOV v10 and v11 users in November 2014 and the results of this survey proved very useful in understanding how RTTOV is used and in planning future developments. It was decided to poll RTTOV v11 and v12 users again in November 2017 to gain an up-to-date insight into the current uses of RTTOV and to inform planning for RTTOV v12 and v13 developments.

The results of this anonymous survey are described below. The current RTTOV development plans have been updated in light of the survey responses and are detailed on this web page:

https://www.nwpsaf.eu/site/software/rttov/future-plans/

Survey results

What platform(s) do you run RTTOV on?

Answer Choices	Responses	
Linux	94.74%	108
IBM AIX	4.39%	5
Cray	4.39%	5
Mac OSX	14.04%	16
Other (please specify)	2.63%	3
	Answered	**114**

What compiler(s) do you use to build RTTOV?

Answer Choices	Responses	
Intel (ifort)	42.11%	48
gfortran	79.82%	91
NAG (nagfor)	0.00%	0
Portland (pgf)	11.40%	13
IBM (xlf)	1.75%	2
Cray fortran	5.26%	6
Other (please specify)	2.63%	3
	Answered	**114**

RTTOV will continue to be supported for the platforms and compilers listed above.

Several users said they were compiling on Windows: the NWP SAF does not plan to support RTTOV on Windows officially as it is not a very common platform for scientific computing.

Which features/capabilities of RTTOV do you use?

Answer Choices	Responses	
Visible/near-IR (i.e. solar-affected) clear-sky simulations	36.45%	39
IR clear-sky simulations	61.68%	66
MW clear-sky simulations	50.47%	54
MW clear-sky simulations with cloud liquid water absorption	36.45%	39
IR simulations with optional trace gases (any of O3, CO2, CO, N2O, CH4)	34.58%	37
IR simulations with variable SO2	12.15%	13
Visible/near-IR (solar-affected) aerosol simulations using scaer* files	10.28%	11
IR aerosol simulations using scaer* files	14.95%	16
Visible/near-IR (solar-affected) aerosol simulations by inputting optical parameters explicitly (aer_opt_param structure)	12.15%	13
IR aerosol simulations by inputting optical parameters explicitly (aer_opt_param structure)	13.08%	14
Visible/near-IR (solar-affected) cloud simulations using sccld* files	10.28%	11
IR cloud simulations using sccld* files	21.50%	23
Baran ice cloud parameterisation for cloud simulations	8.41%	9
SSEC (Baum) ice cloud optical properties for cloud simulations	8.41%	9
Visible/near-IR (solar-affected) cloud simulations by inputting optical parameters explicitly (cld_opt_param structure)	13.08%	14
IR cloud simulations by inputting optical parameters explicitly (cld_opt_param structure)	17.76%	19
MW cloud and/or precip (RTTOV-SCATT)	35.51%	38
Land surface BRDF atlas	20.56%	22
University of Wisconsin land surface IR emissivity atlas (UWIRemis)	26.17%	28
CAMEL land surface IR emissivity atlas	11.21%	12
TELSEM/TELSEM2 MW emissivity atlas	15.89%	17
CNRM MW emissivity atlas	5.61%	6
PC-RTTOV	12.15%	13
Capability to call HT-FRTC model through RTTOV	1.87%	2
Zeeman coefficients	3.74%	4
NLTE correction	4.67%	5
RTTOV GUI (graphical user interface)	14.95%	16
RTTOV Python wrapper	21.50%	23
RTTOV C++ wrapper	9.35%	10
Please note any other RTTOV features which you find useful	9.35%	10
	Answered	**107**

What application(s) do you use RTTOV for?

Answer Choices	Responses	
NWP assimilation	37.38%	40
Atmospheric profile and/or surface parameter retrieval	42.99%	46
Simulated satellite imagery	57.94%	62
Reanalysis	9.35%	10
Studies in preparation for future instruments	19.63%	21
Studies related to old instruments (e.g. SSU, PMR, IRIS, SCAMS, SMMR, etc)	7.48%	8
I use the NWP SAF 1DVar software which requires RTTOV	9.35%	10
I use the NWP SAF Radiance Simulator which requires RTTOV	7.48%	8
I use RTTOV with COSP (the CFMIP Observation Simulator Package)	4.67%	5
I use some other software which requires/uses RTTOV (please specify which software under Additional information below)	8.41%	9
Additional information or other applications	14.02%	15
	Answered	**107**

What features would you be interested in seeing in RTTOV in the future?

Answer Choices	Responses	
Alternative (more efficient) cloud overlap scheme for visible/IR cloud simulations (planned for v12.3)	38.14%	37
Make it easier for users to generate RTTOV-SCATT optical property "Mietable" files (planned for v12.3)	31.96%	31
Simulations at UV wavelengths (planned for v13)	15.46%	15
Inclusion of 3D effects in MW, visible and IR scattering simulations (planned for v13)	39.18%	38
Improved MW sea surface emissivity model (planned for v13)	35.05%	34
Capability to simulate active MW sensors in RTTOV-SCATT e.g. DPR (planned for v13)	23.71%	23
More optional trace gases (please specify gas(es) below)	9.28%	9
Have the option of downloading RTTOV as RedHat RPM or Debian package	22.68%	22
Additional information or other suggestions	15.46%	15
	Answered	**97**

In response to the survey feedback, the following have been implemented for RTTOV v12.2 (due March 2018):

- Make the Python wrapper compatible with both Python 2 and 3
- Aerosol optical property files for CAMS aerosol species
- RTTOV “quick start” guide to help new users get started

The following requested features will be considered for a future release:

- Tool to enable users to generate their own aerosol optical property files
- Enable retrieval of aerosol particle size by making this an input variable
- Support for HDO as a variable gas

The “Future plans” web page gives a list of the current plans for upcoming versions of RTTOV and, as noted above, has been updated in light of the survey responses.
https://www.nwpsaf.eu/site/software/rttov/future-plans/

The page also lists some commonly requested capabilities that we do *not* currently plan to implement in RTTOV.

Users are encouraged to continue submitting requests, comments and questions about RTTOV either to the NWP SAF helpdesk or to the RTTOV forum:
https://nwpsaf.eu/feedback.html
https://www.nwpsaf.eu/site/forums/forum/rttov/