World Meteorological Organization
The Commission for Basic Systems (CBS), OPAG-DPFS / ET-ERA

Instructions on the Time of Arrival test

for discussions among ET-ERA members (version Wednesday, 31 May 2017)

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In behalf of Dr. Valery Kosykh (RSMC Obninsk)

1. What should be processed at the test in June 2017

Valery proposed to exchange not only ToA but also the standard (Trajectory, Exposure and Deposition) charts at the tests in June and October 2015. Those standard charts were very useful when we interpret how the plume arrived at the interested areas. Therefore the participants are encouraged to provide the same things (the standard plus the ToA charts) again. Namely:

STANDARD PRODUCTS:

Seven maps consisting of:

(a) Three-dimensional trajectories starting at 500, 1,500 and 3,000 m above the ground, with particle locations at six-hour intervals (main synoptic hours up to the end of the dispersion model forecast);

(b) Time-integrated airborne concentrations within the layer 500 m above the ground, in Bq s m^{-3} for each of the three forecast periods;

(c) Total deposition (wet + dry) in Bq m^{-2} from the release time to the end of each of the three forecast periods.

[WMO No. 485 Appendix II-7]

ToA CHARTS:

1. RSMCs generate three ToA plots – for periods 0-24, 25-48, 49-72 hours after the nearest synoptic time (NWP initial time: T_{INIT}) prior to or equal to the start of the release time – like concentration- and deposition-charts.
2. On plots, it is desirable to use colored hatched or shaded areas instead of (or together with) isolines to present the arrival time of the instantaneous and / or time-integrated concentration (Bq/m^3, and / or Bq s /m^3).
3. First plot (for first 24 hours period after T_{INIT}) contains four areas in different colors (with 6 hours step).

4. Second (third) plot contains 5 areas (first area – cloud position after first (second) 24 hours period after T_{INIT} – by grey area (for example) and next four areas – with 6 hours step).
5. If areas for different time steps overlay one to another we use the color for 'previous' time step.
6. To define the cloud boundary in terms of the concentration value, the same threshold values should be used for the three ToA plots.
7. The initial time of ToA should be clearly indicated on the three ToA charts. (Basically the initial time of ToA would be the same as T_{INIT}.)

The arrival of the plume can be defined using whether the instantaneous or the time-integrated concentrations. Preferences of the participants are as follows:

Member (Centre)	Type of ToA	Time integration period
Anton (Exeter)	Both	All through (since the start release)
Dmitriy (Obninsk)	Instantaneous	
Gerhard (Vienna)	Instantaneous	
Jean (Toulouse)	Both	All through (since the start release)
Jim (Melbourne)	Instantaneous	
Masami (Tokyo)	Both	All through (since the start release)
Nils (Montreal)	Time-integrated	3 hours
Zhenxin (Beijing)	Both	All through (since the start release)

As for the threshold to identify the arrival, the following values have been proposed by some members:

For instantaneous ToAs: 0 [Bq s/m^2] (suggested by Gerhard)
For time-integrated ToAs: the minimum value shown in the Exposure charts at each centre (Valery proposed for the past tests)

Guenther has not specified realistic values. The participating members may adopt the threshold above. When you adopt thresholds other than above, you are encouraged to clearly indicate your threshold on each ToA chart.

The participation in the ToA test is arbitrary for non-lead RSMCs. The participating members may process as many charts as they want to, and do not necessarily have to cover all the requests issued at ConvEx-3. However, please

note that IAEA will send a couple of requests specifying different radiological species, and this might be a good opportunity to compare scientifically standard products and ToA charts. Therefore, the members of ET-ERA are encouraged to process and exchange as many test charts as they can.

2. Ways to exchange test charts

Because some members of ET-ERA find it difficult to change data transaction procedures through FTP/SCP/HTTP/HTTPS, participants are recommended to deliver their charts by email. Email addresses of the participating members are found below. You need to send your charts to all recipients listed in the table.

Member(s)	Email address(es)	
Anton Muscat	anton.muscat@metoffice.gov.uk	
Dmitriy Kamaev	kda@feerc.ru	
Gerhard Wotawa	gerhard.wotawa@zamg.ac.at	
Guenther Winkler	g.winkler@iaea.org	Observer
Jean Nicolau	jean.nicolau@meteo.fr	
Jeff McQueen	jeff.mcqueen@noaa.gov	Observer
Jim Fraser	jim.fraser@bom.gov.au	
Jochen Foerstner	jochen.foerstner@dwd.de	Observer
Masami Sakamoto	msakamot6408@gmail.com	
Nils Ek	nils.ek@canada.ca	
Rene Servranckx	rservranckx@gmail.com	Observer
Zhenxin Song	songzx@cma.gov.cn shenglilily@gmail.com	

Most of the members are not involved in their 24/7 operation. It is convenient for the members to distribute files during their local office hours. Members also may add and/or update their charts after ConvEx-3 (on 21-22 June) finishes, but the participants are encouraged to provide all relevant charts no later than the end of the exercise week (by Friday, 23 June).

When you are willing to post your charts in an operational manner, you may use the ToA test web at Tokyo. You can find what you upload at the web site below:

http://eer.kishou.go.jp/cgi-bin/jntrsmc_toa_add.pl

Please note that the URL (or the name of the script) is not known by outside users. So this can work as our private monitoring tool within the ET-ERA members.

The way to upload your files is the same as how to upload your current operational products to Tokyo's FTP server (just putting your files in your folder).

Please note that only the members from the RSMCs for the EER operational service can access to Tokyo's FTP server.

Since this is a private test among the ET-ERA members, we need to adopt different naming rules for the charts. The names of files are found below:

The charts are named as follows. [XX] refers to the country code (US, CA, AU, UK, FR, CN, JP, RU), and [##] is the time frame number (## = 01, 02, 03):

ToA (instantaneous)

TLTA[XX]_[##].gif	large size ToA instantaneous (~750x800px)
TSTA[XX]_[##].gif	small size ToA instantaneous (~250x300px)

ToA (time-integrated)

TLTT[XX]_[##].gif	large size ToA time-integrated (~750x800px)
TSTT[XX]_[##].gif	small size ToA time-integrated (~250x300px)

Trajectories

TLTJ[XX].gif	large size trajectories (~750x800px)
TSTJ[XX].gif	small size trajectories (~250x300px)

Exposures

TLIC[XX]_[##].gif	large size integrated concentration (~750x800px)
TSIC[XX]_[##].gif	small size integrated concentration (~250x300px)

Depositions

TLTD[XX]_[##].gif	large size total deposition (~750x800px)
TSTD[XX]_[##].gif	small size total deposition (~250x300px)

Cover

TCVR[XX].gif	cover sheet (~750x800px)

Time card

T[XX]_DATE.TXT	the initial date/time of NWP, and the issued date

(In the same format as [XX]_DATE.TXT)

A set of ATDM model charts (in ps)

Trsmc.ps	all model graphics contained in one Postscript file.

3. The way to publish a report on the ToA test

After the ConvEx week, I will ask participants and confirm what they provide during the ToA test, and will devise a draft report by the end of July.

Then I will ask you for your advices and opinions as the member review. This review might be extended to the other relevant experts like the WMO Secretariat DPFS officers, Ms. Martina SUAYA (or a core member specified by the Servicio Meteorológico Nacional of Argentina), and the associate members of ET-ERA posted on http://www.wmo.int/pages/prog/www/CBS/Lists_WorkGroups/CBS/opag%20dpfs/et-era/members .

The reviewed report will be submitted to the next meeting of ET-ERA, and we will have discussions on the outcomes of the test and on what will be an appropriate set of service as part of the future development of the nuclear ERA.

END