Joint EUSTACE and GlobTemperature User Workshop

Lisbon, Portugal, 27 – 29 November 2017

Session: Continuity of climate quality air temperature records

Questions for Elizabeth (Lizzie) Good:

- Why is the physical modelling to predict satellite 2 m air temperatures not the best method yet?

  It's very dependent on lower atmosphere temp e.g. at 30-40m. The physical models need to get this from e.g. reanalysis, and the errors in the re-analysis can be high.

  - Is there a role for AIRS (Atmospheric InfraRed Sounder)/ IASI (Infrared Atmospheric Sounding Interferometer) lower atmosphere temperature?

    AIRS does provide a 2 m temperature, but it doesn't affect the radiances, so it can vary quite a lot. Also, they are instantaneous temperatures, rather than minimum and maximum temperatures.

General discussion:

- Clouds:

  Lizzie Good noted that clouds are one of the biggest challenges with using satellite data particularly over land. It was mentioned that many users want spatially complete datasets. However, not every user needs it. One user during the workshop noted she would rather have a gap than spatially complete data that has been filled where there is no data (how reliable are the data then?). Users want information on how reliable the data are for their application.

  Different satellite products with different cloud masks could be difficult for users. Wouldn't it be possible to have an agreement on the cloud masks that producers are using? It was noted that consistent cloud clearing would be good, although it could be difficult for the various instruments.

  It was noted that there are different trends in clouds over land and ocean. It is likely that the presence of clouds can have an effect on land temperatures.

- Spatial resolution and coverage:

  Increasing spatial resolution of datasets would be useful, and it would be possible to get higher spatial resolutions than in the current EUSTACE datasets. However, over urban surfaces this would be a huge challenge. So it would need a specific effort/project to work on this.

  Would more detailed land cover information help? The relationships for EUSTACE are currently using "vegetation" rather than various land cover types, as some land cover types only have a few stations. However, changes in land cover would be useful.

  It was noted that a higher resolution requires technological developments on satellites, and it was suggested to look also into downscaling approaches e.g. UCLA.

  When producing trends in land surface temperature, it would be important to take into account land cover change e.g. if there is increasing urbanisation/desertification, then it would naturally change the LST.

  It was noted that the retrieval of the information on the Polar Regions is a useful output of the project.

- Updates:
  It was asked how important it is to have regular updates to the dataset, not just ending when a project ends? It was noted, that for getting funding for updates it is important to demonstrate that EUSTACE is adding value over reanalysis data, e.g. better representation of extremes.
- Accessibility:
  Accessibility of the data can also be important. If you have to do a great deal of work to use the data, that would be difficult for users or potential users may decide not to use the dataset at all.
- Uncertainties:
  One way to showcase the use of uncertainties would be to show comparisons in specific areas, and so show that areas with poor comparisons can be picked up by the uncertainties.