

Interactive comment on “The Sofia University Atmospheric Data Archive (SUADA)” by G. Guerova et al.

Anonymous Referee #1

Received and published: 15 April 2014

Review: The Sofia University Atmospheric Data Archive (SUADA)

General comments:

GNSS meteorology is an innovative atmospheric remote sensing, which reached an operational level for various applications, including the use for operational regional weather forecasts. This development opened the door for a broad spectrum of applications in atmospheric research. The development of GNSS meteorology currently profits from the upcoming new navigation satellite systems and also from longer data sets, which allow for initial application to investigate long term changes of water vapor as part of climatological investigations.

One highlight of the recent international GNSS Meteorology research is the successful
C539

formation of the COST action GNSS4SWEC ES12206, which stimulates the international cooperation and accelerates the current developments in this field. A major focus of this COST action is the inclusion of new countries, especially from Eastern and Southeastern European countries.

In view of this background I appreciate to see a contribution from one of these countries (Bulgaria) to the international research in the field. One can regard this as a new and unique contribution, which is worth to be published.

Therefore I recommend this paper for publication, but strongly recommend to improve the presentation!

There are a number of typos and bad spelling and also potential for improvement of the figures. Check your manuscript carefully. I give only some examples for potential improvements, but strongly recommend also to check the entire paper for improvements.

Specific comments:

Page 4:

L23: Please check the number of stations. I think the number is ~1500.

Page 9:

L21: Please remove statements which are not relevant for SUADA. E.g. The relative humidity sensor is a thin-film capacitor ... Is this important for SUADA? However, you are right, it is worth to include the estimated accuracy. By the way, provide somewhere in the manuscript the estimated accuracy for the GPS ZTD (and IWV). This is relevant information for SUADA.

Page 10:

L9: ...but requires careful quantification of possible systematic biases. What do you mean? The quantification of possible systematic biases is not a specific problem of radiosondes. It is a problem of any observing system including the GPS ZTDs. Just

to give you an example, switching from relative to absolute PCVs in 2006 introduced a systematic difference of ~ 8 mm in GPS estimated ZTD.

L19: may be the listing of the hours with minutes is not necessary here, e.g., manually collected seven times daily every 3 hours beginning at 00:00 or similar

Page 11:

L11: The details about WRF can be softly removed (you use 5 lines here for this information, is not balanced). These details are not relevant for SUADA, are they? It is sufficient to provide a single reference.

L22: This sounds strange. At first, you use WRF data to derive GPS IWV, and in the next step you 'verify' the WRF water vapour field with the GPS IWV. Instead of 'verify' please write 'compare'.

Page 14:

You use the GFS to explain the meteorological conditions (Fig. 4). This must be mentioned somewhere in the first paragraph. Next, you discuss the GPS IWV. What I do not understand is, why do you not simply provide a map of the GFS IWV? GFS data are freely available (with 1° or 0.5° resolution) and contain Relative Humidity, Temperature and Pressure. (<http://www.nco.ncep.noaa.gov/pmb/products/gfs/>).

Page 27:

Is it possible to replace the cyrillic letters?

Page 31

Maps quite (too) small!

Why are the colormaps of the Meteosat and GNSS IWV (Fig.6) reversed? Is it possible to provide the same colormap? Otherwise, it is not obvious how well the GPS IWV fills the gap. And again, it would be useful to see the GFS IWV map as well.

C541

Reference list:

Please check again carefully (only some examples)

? what mean these numbers after the reference 5, 12, 8 ...?

Line 27: Mätzler or Matzler

Line 32: Geophys

Technical corrections:

page 2:

L5: Advances in GNSS data processing makes it possible to use the data for ... L10: SUADA is a user friendly ...

page 3:

L5: ...and finds it to be ... L14: Recent... L16: ...in the Black Forest region ... L28: ... by examining two case studies. L29: ... and the second case are ...

page 4:

L2: For the analysis of the case studies several methods are used ... L15: ...was the focus of the EU projects ...

page 7:

L16: ...elevation cut-off angle.. L17: provide a reference for Global Mapping Function (GMF). L26: GLONASS and not Glonass. L28: provide a reference for the Vienna Mapping Function 1 (VMF1). L28: in addition to the SOFI station six IGS stations are archived.

Page 8:

L11: ..., in total 15 stations. L18: provide a reference for the dry Niell Mapping Function (NMF).

C542

Page9:

L8: provide a reference for Saastamoinen. ... with dry NMF and a tilting gradient model. provide a reference for the gradient model. L16: Radiosondes are widely ...
L18: At the station Sofia ... routine daily soundings are performed. L20: Since 2005 the VAISALA ...

Page10:

L5: ... are archived in SUADA.

Page12:

L6: what is 'the elevation angle of the satellite'? Better write 'the elevation angle of the station-satellite link'. L17: θ is the latitude and not the gravitational acceleration. But you are right, it appears in the equation because the gravitational acceleration depends on the latitude. L23: ZTD was already appreciated somewhere in the beginning of the long manuscript.

Page 13:

L6: ...are 'co-located' instead of 'allocated'.

Page 15:

L6: ...the case study presented in this paper demonstrate the synergy between.. L8: .. will be the detailed analysis of ...

Page 16:

L3: ... Fig. 7 shows the the GNSS IWV and RS-IWV anomalies.

Page 17:

Last sentence: This is already mentioned on page 15 line 8. I propose to remove it there.

C543

Interactive comment on Atmos. Meas. Tech. Discuss., 7, 2153, 2014.

C544