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Systematic errors in DORIS-derived terrestrial reference frame: How large are they and how much can they be avoided?

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DORIS is one of the 4 techniques participating in the recent ITRF realizations. In particular, several successive IGN/JPL solutions are available through the International DORIS Service (IDS) data centers, both for time series and for cumulative solutions. They correspond to changes in models (eg. gravity field) or to changes in the analysis strategy (selection of estimated parameters, time-constrains). The goal of this presentation is first to compare these successive DORIS solutions with the successive ITRF realizations and to detect possible improvement or degradation in terrestrial reference frame realizations (geocenter and scale). Then, we will show that previous improper DORIS analysis strategy can create large systematic periodic errors in the Z-geocenter and how new data processing options (eg. solar radiation pressure estimation) can mitigate these effects. Finally, we will focus on DORIS/TRF scale results, trying to assess if the small remaining discrepancies between the IGN/JPL DORIS solutions and ITRF2005 either come from the DORIS results, from the ITRF2005 combination or from both. In conclusion the potential use of DORIS results to define the future ITRF2008 datum will be discussed.