

ASSESSING DIFFERENCES BETWEEN EXISTING ATMOSPHERIC NON-TIDAL LOADING MODELS

S. Nahmani¹, X. Collilieux^{1,2}, T. van Dam³, L. Métivier¹, J. Ray⁴, Z. Altamimi¹

¹ IGN/LAREG, Université Paris Diderot, Paris, France

² Syrte, Observatoire de Paris, Paris, France

³ University of Luxembourg, Luxembourg, Luxembourg

⁴ NOAA/NGS, Silver Spring, MD, United States

Environmental mass, including the atmosphere, the ocean, and continental water, redistribution at the Earth's surface causes crustal displacements that can reach up to a few centimeters. Models for these displacements are available; they include contributions for a specific effect or for a combination of effects. However, the International Earth Rotation and Reference Systems Service (IERS) conventions recommend not applying the non-tidal station displacement corrections. From the user point of view, it is nonetheless worth understanding the differences that exist between these models in terms of station displacements, e.g. why do they differ, and how much are the differences compared to the noise level of geodetic series.

Several studies have compared different models together to geodetic time series. But the set of stations used in the different comparisons is highly variable and cover different time periods. We propose to revisit the comparison using all available modeled load displacement time series over the same time period. We will compare the models with one another and with a large global set of observed station coordinates. Modeled series will be compared in terms of percentage of variance reduction (used to determine an error budget), power spectra and sub-diurnal signals. They will be also compared in both Center of Figure and Center of Mass frames.