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A comparison of atmospheric loading models applied to SLR data

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We compute displacements of global SLR station coordinates by atmospheric loading based on surface pressure data from European Centre for Medium-Range Weather Forecasts (ECMWF) ERA-interim data. Inhouse we generate two branches: firstly straightforward following Farrel's theory but using updated load Love numbers, secondly from utilizing localized Green's functions instead of global ones. Externally provided displacements are available f.i. from the International Mass Loading Service (IMLS) based on different input data and modeling. We compare these displacements and apply them to Satellite Laser Ranging (SLR) data processing of a recent six years period of the LAGEOS, LARES, AJISAI, STARLETTE and STELLA geodetic missions. We assess the impact of the loading models on precise orbit determination and Earth parameters of interest.