## Table 1: Summary of the dataset employed in this study

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Categories | Data/model | Time  | Spatial resolutions  | Data sources  |
| GRACE TWS  | CSR-M (RL06) | 2003-2017 | 0.5⁰ x 0.5⁰ | http://www2.csr.utexas.edu/grace/RL06.html |
| GSFC-M (RL05) | 2003-2017 | 0.5⁰ x 0.5⁰ | <https://disc.gsfc.nasa.gov/datasets>  |
| JPL-M (RL06) | 2003-2017 | 0.5⁰ x 0.5⁰ | <https://grace.jpl.nasa.gov/data/get-data> |
| JPL-SH (RL06) | 2003-2017 | 1⁰ x 1⁰ | <https://grace.jpl.nasa.gov/data/get-data> |
| CSR-SH (RL06) | 2003-2017 | 1⁰ x 1⁰ | <https://grace.jpl.nasa.gov/data/get-data> |
| GFZ-SH (RL06) | 2003-2017 | 1⁰ x 1⁰ | <https://grace.jpl.nasa.gov/data/get-data> |
| Soil moisture  | GLDAS-NOAHERA-InterimWGHM | 2003-20192003-20192003-2009 | 1⁰ x 1⁰0.5⁰ x 0.5⁰0.5⁰ x 0.5⁰ | https://disc.gsfc.nasa.gov/datasets?keywords=GLDAShttps://www.ecmwf.int/en/forecasts/datasets/reanalysis-datasets/era-interim<http://www.uni-frankfurt.de/> 49903932/7\_GWdepletion? |
| Rainfall | TRMM | 2003-2014 | 0.25⁰ x 0.25⁰ | (https://pmm.nasa.gov/dataaccess/downloads/trmm) |
| Water level height | Satellite Altimetry | 2003-2019 | N/A | http://www.pecad.fas.usda.gov/ cropexplorer/global\_reservoir/ |
| Groundwater | GLDAS-NOAH  | 2003-2019 | 0.5⁰ x 0.5⁰ | https://disc.gsfc.nasa.gov/datasets?keywords=GLDAS |

Table 2: Uncertainty (±cm), signal-to-noise ratio (SNR), Root mean square error (RMSE cm) and correlation of GRACE solution over NRB & sub-basins

|  |  |  |
| --- | --- | --- |
| NRB& sub-basins | Uncertainty(±cm) | SNR |
| JPL-M | GSFC-M | CSR-M | GFZ-SH | JPL-SH | CSR-SH | Ens-SH | JPL-M | GSFC-M | CSR-M | GFZ-SH | JPL-SH | CSR-SH |
| NRB | 0.32 | 0.23\* | \*0.21 | 0.85 | 0.34 | 0.36 | 0.21 | 1.34 | 1.74\* | 1.84 | 0.67 | 1.09 | 1.25 |
| BNR | 0.31 | 0.22\* | 0.19 | 0.67 | 0.85 | 0.35 | 0.41 | 2.42 | 2.45\* | 2.62 | 0.66 | 0.51 | 1.26 |
| LVR | 0.32\* | 0.51 | 0.32 | 0.83 | 0.85 | 0.61 | 0.59 | 2.75 | 5.06\* | 6.2 | 1.84 | 1.16 | 2.39 |
| BER  | 0.091\* | 0.8 | \*0.92 | 0.15 | 0.23 | 0.21 | 0.06 | 2.53\* | 0.30 | 0.31 | 1.27 | 0.57 | 1.00 |
| MNR  | 0.013 | 0.014\* | 0.010 | 0.05 | 0.17 | 0.08 | 0.04 | 26.9\* | 14.30 | 16.2 | 3.40 | 0.65 | 2.65 |
| Over NRB | RMSE and correlation between satellite altimeter  |
| JPL-M | GSFC-M | GFZ-SH | JPL-SH | CSR-SH | Ens-SH | CSR-M |
|  RMSE | 0.88 | 0.81 | 1.08 | 1.10 | 1.15 | 1.11 | 0.52\* |
|  R2 | 0.68 | 0.72 | 0.15 | 0.63 | 0.65 | 0.65 | 0.87\* |