

Overview of data file content

These files contain snowfall and precipitation data for the Indus, Ganges and Brahmaputra Basins, for 1971–2000 and 2071–2100. The details are described in the reference article.

For each of the major basins there is one Excel file with total/mean values for the basin, as well as one file containing the same data for each of the sub-basins in that basin. Each file contains 6 sheets, one for each variable. Each sheet contains an ensemble of monthly values for this variable, based on different combinations of reanalysis, observations and CMIP5 model data.

<obs> refers to either TRMM, CRU or APHRODITE.

<model> refers to any one of the CMIP5 models used.

Metadata

- Area
- Latitude and longitude: Corners defining the outline of each basin.

Precipitation

The list of precipitation data have been kept mainly in the same format as the snowfall data. As a result, and as changes in temperature do not affect the precipitation data, some variables contain the same information.

- merra: MERRA reanalysis precipitation.
- biascorr_P_<obsdata>: MERRA precipitation bias-corrected with <obsdata>.
- biascorr_P_<obsdata1>_T_<obsdata2>: MERRA precipitation bias-corrected with <obsdata1>. For this variable, the T correction has no influence, so this will be the same as biascorr_P_<obsdata1>.
- cmip5_Pchange_<model> and cmip5_TPchange_<model>: 2071–2100 precipitation in <model>.
- cmip5_Pchange_Allmodel, cmip5_TPchange_Allmodel, cmip5_Pchange_MultimodelMean and cmip5_TPchange_Multimodelmean: For precipitation, these all represent the CMIP5 multi-model mean for 2071–2100.
- cmip5_Pchange_Allmodel_biascorr_P_Aphrodite_T_Aphrodite and cmip5_TPchange_Allmodel_biascorr_P_Aphrodite_T_Aphrodite and

Snow

All variables contain snowfall, calculated from different combinations of temperature and precipitation data.

- merra: Original MERRA reanalysis snowfall.
- merra_terraincorr_reference: Our MERRA reference snowfall, based on terrain-adjusted MERRA temperature and MERRA precipitation.
- merra_t2m: based on uncorrected MERRA 2m temperature and MERRA precipitation.
- biascorr_T_<obsdata>: based on terrain-adjusted MERRA temperature bias-corrected with <obsdata>, and MERRA precipitation. Shows the effect of bias-correcting temperature only.

- biascorr_P_<obsdata>: based on terrain-adjusted MERRA temperature, and MERRA precipitation bias-corrected with <obsdata>. Shows the effect of bias-correcting precipitation only.
- biascorr_P_T_<obsdata>: based on terrain-adjusted MERRA temperature bias-corrected with <obsdata>, and MERRA precipitation bias-corrected with <obsdata>. Shows the effect of bias-correcting both temperature and precipitation.
- cmip5_Tchange_<model>: based on MERRA precipitation, and terrain-adjusted MERRA temperature + the temperature change from 1971–2000 to 2071–2100 in <model>. Shows the effect of changing (increaseing) temperature over the coming century, while letting precipitation remain as in the present time.
- cmip5_Pchange_<model>: based on terrain-adjusted MERRA temperature, and MERRA precipitation multiplied by the fractional change in precipitation from 1971–2000 to 2071–2100 in <model>. Shows the effect of changing precipitation over the coming century, while letting temperature remain as in the present time.
- cmip5_TPchange_<model>: based on terrain-adjusted MERRA temperature + the temperature change from 1971–2000 to 2071–2100 in <model>, and MERRA precipitation, and terrain-adjusted MERRA temperature + the temperature change from 1971–2000 to 2071–2100 in <model>. Shows the effect of changing both temperature and precipitation over the coming century.
- cmip5_Tchange_Allmodel: based on MERRA precipitation, and terrain-adjusted MERRA temperature plus the mean temperature change from 1971–2000 to 2071–2100 in the models.
- cmip5_Pchange_Allmodel: based on terrain-adjusted MERRA temperature and, MERRA precipitation multiplied by the mean fractional precipitation change from 1971–2000 to 2071–2100 in the models.
- cmip5_TPchange_Allmodel: based on terrain-adjusted MERRA temperature plus the mean temperature change from 1971–2000 to 2071–2100 in the models, and MERRA precipitation multiplied by the mean fractional precipitation change from 1971–2000 to 2071–2100 in the models.
- cmip5_Tchange_MultiModelMean: Mean snowfall over all CMIP5 models, when considering only changes in temperature, while precipitation is kept as in the present time.
- cmip5_Pchange_MultiModelMean: Mean snowfall over all CMIP5 models, when considering only changes in precipitation, while temperature is kept as in the present time.
- cmip5_TPchange_MultiModelMean: Mean snowfall over all CMIP5 models, when considering changes in both temperature and precipitation over the coming century.
- cmip5_Tchange_Allmodel_P_Aphrodite_T_Aphrodite: As cmip5_Tchange_Allmodel, but with reference to present time biascorr_T_Aphrodite_P_Aphrodite instead of merra_terraincorr_reference.
- cmip5_Pchange_Allmodel_P_Aphrodite_T_Aphrodite: As cmip5_Pchange_Allmodel, but with reference to present time biascorr_T_Aphrodite_P_Aphrodite instead of merra_terraincorr_reference.
- cmip5_TPchange_Allmodel_P_Aphrodite_T_Aphrodite: As cmip5_TPchange_Allmodel, but with reference to present time biascorr_T_Aphrodite_P_Aphrodite instead of merra_terraincorr_reference.

Snowfraction

Fraction of precipitation falling as snow. Variable names as for snow.

Pchange

- Pchange_cmip5_<model>: Fractional change in precipitation in <model> from 1971–2000 to 2071–2100.
- Pchange_cmip5_Allmodel and Pchange_cmip5_mean: Mean over all models.

Tchange

- Tchange_cmip5_<model>: Change in temperature in <model> from 1971–2000 to 2071–2100.
- Tchange_cmip5_Allmodel and Pchange_cmip5_mean: Mean over all models.

Reference

Must be updated in final version.

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