

SUPPLEMENTAL MATERIAL:

2014WR016728

**Predicting glacio-hydrologic change in the headwaters of the Zongo River, Cordillera Real,
Bolivia**

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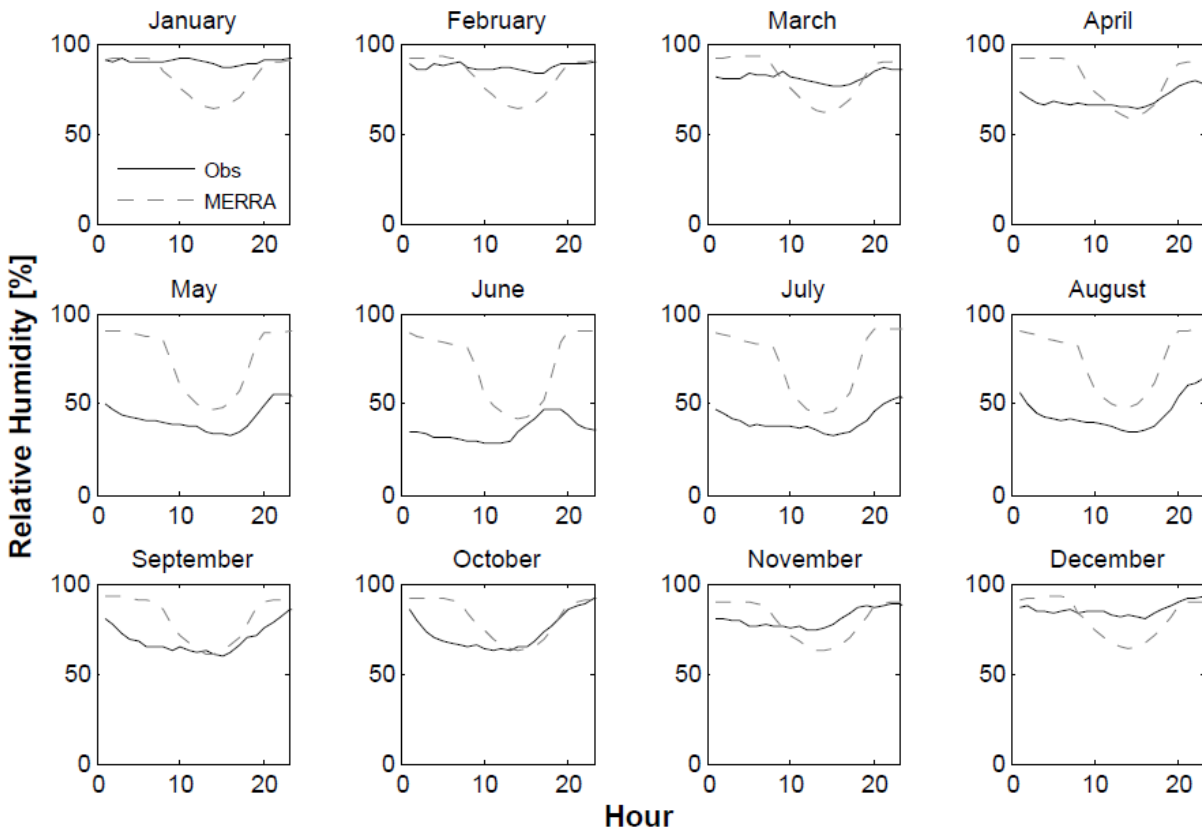
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Section 1: Reanalysis Data Bias Correction

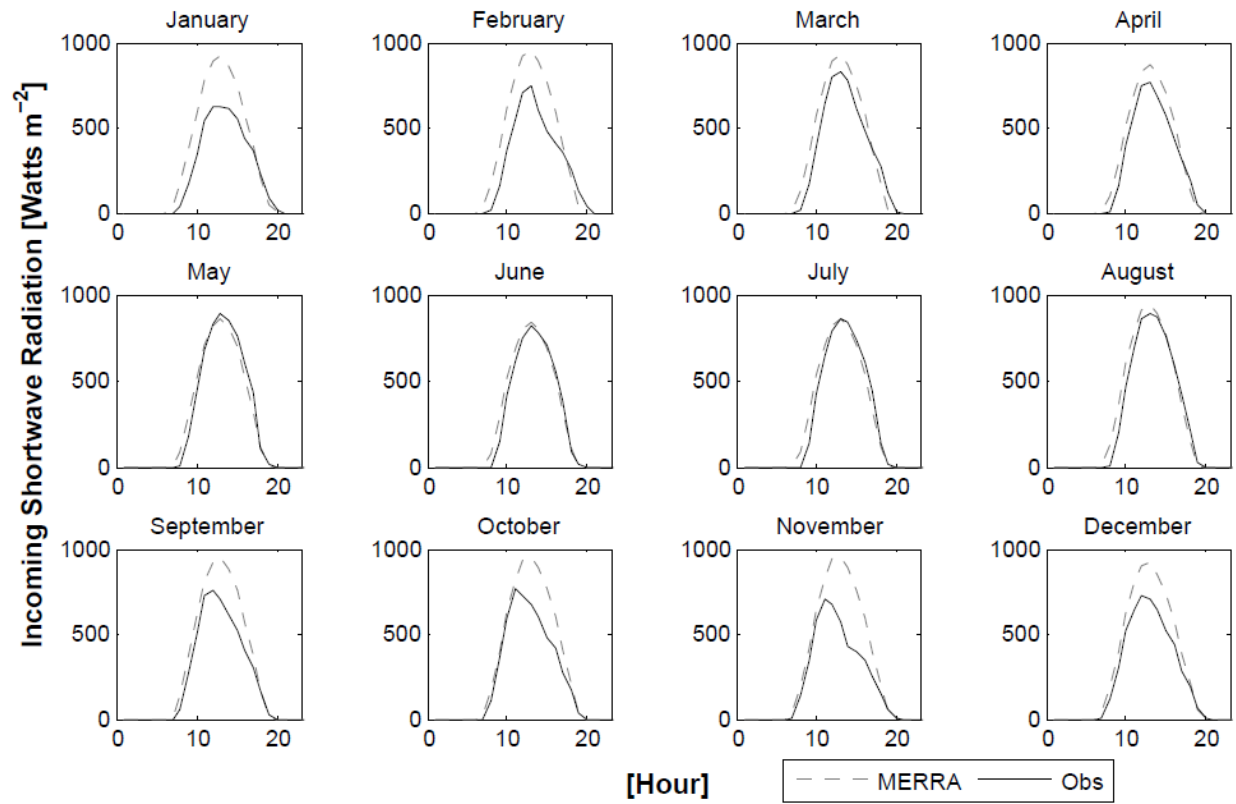
We provide comparisons of raw MERRA reanalysis meteorological variables with those that were locally measured at the Off-Glacier (5050 m, Supplemental Figures 1-5). From these comparisons we derived ratios (RH, SW, wind) and absolute differences (temperature) for each hour of the day, for each month of the year to use in bias correction of the longer time series of reanalysis data. Bias correction was not applied to precipitation as the statistical probability distributions at the Plataforma locations are similar (Supplemental Figure 5) and monthly accumulations compared well (NSE=0.76). The largest differences are observed in precipitation events with low accumulation and the highest accumulation. The reanalysis data contains more frequent small precipitation events, and precipitation events that are lower than the observable amount with field instrumentation.

Relative Humidity



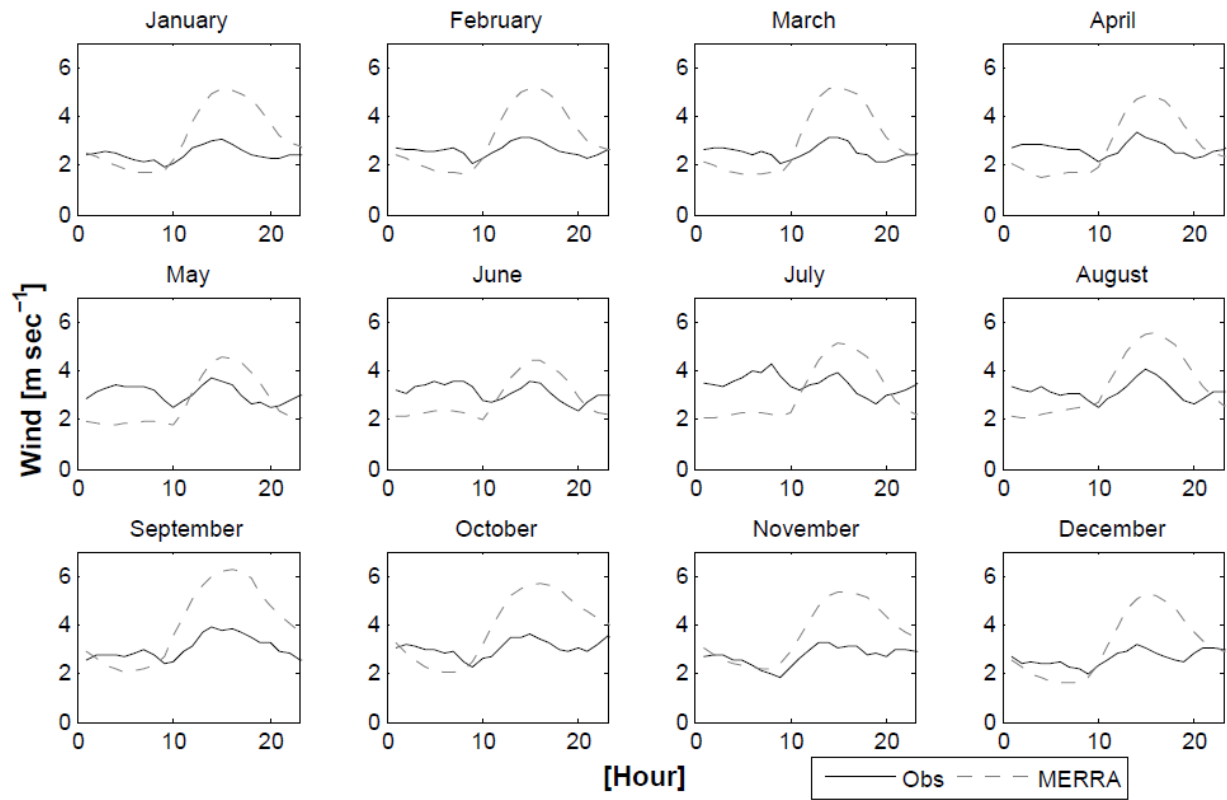
Supplemental Figure 1: Comparison of MERRA and locally measured (Hors-Glacier) hourly relative humidity.

Shortwave Radiation



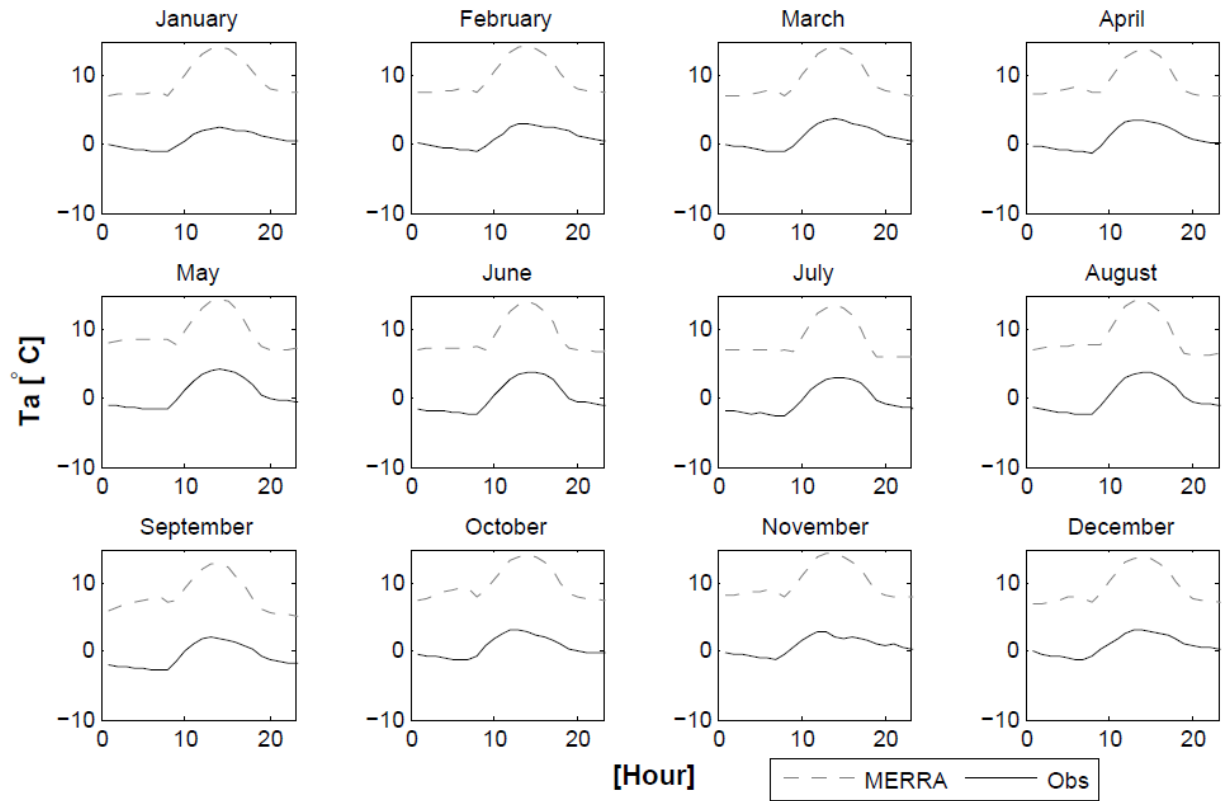
Supplemental Figure 2: Comparison of MERRA and locally measured (Hors-Glacier) hourly shortwave radiation.

Wind

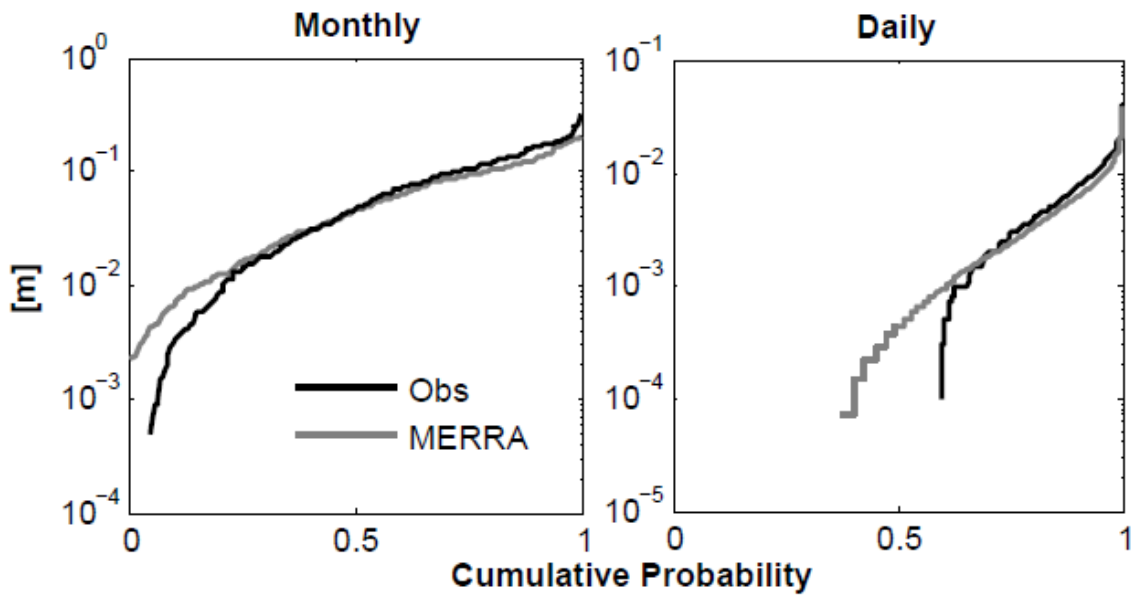


Supplemental Figure 3: Comparison of MERRA and locally measured (Hors-Glacier) hourly wind speed.

2-meter Air Temperature



Supplemental Figure 4: Comparison of MERRA and locally measured (Hors-Glacier) hourly near surface air temperature.



Supplemental Figure 5: Comparison of MERRA and locally measured precipitation (Plataforma) for monthly and daily temporal aggregation intervals for hydrological years 1992-2010.