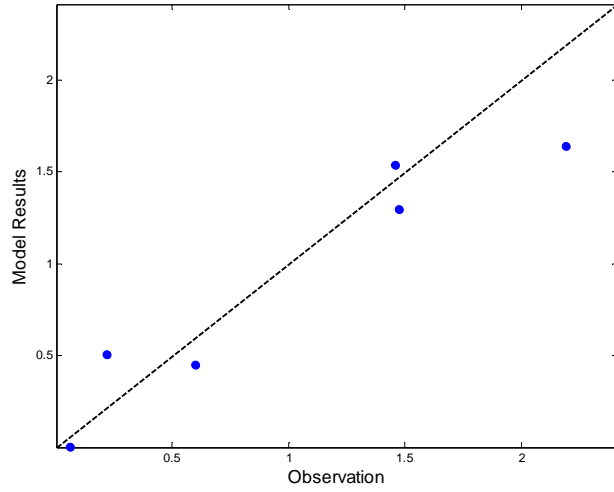
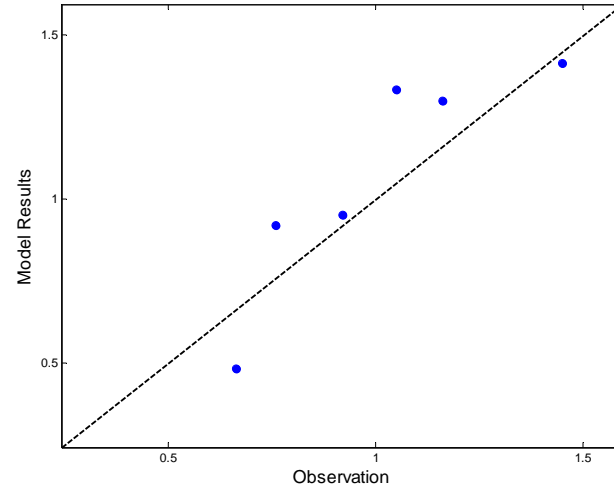


Figure. Comparison between observations and their model equivalents. Both observations and the model equivalents are normalized to observed mean. 3 modeling sites include Arabian Sea (**AS**), Equatorial Pacific (**EQP**) and Hawaii Ocean Time-series Station ALOHA (**HOT**). **NO₃**: Nitrate; **PO₄**: phosphate; **PHYn**: phytoplankton nitrogen biomass (exclude *Trichodesmium* spp.); **CHL**: Chlorophyll *a*; **PP**: particulate primary production; **MZc**: mesozooplankton carbon biomass; **BAc**: heterotrophic bacterial carbon biomass; **BP**: heterotrophic bacterial production; **sDOC**, **sDON** & **sDOP**: semilabile dissolved organic carbon, nitrogen and phosphorus; **POC**, **PON** & **POP**: particulate organic carbon, nitrogen and phosphorus; **STc**, **STn** & **STp**: particle carbon, nitrogen and phosphorus flux collected by sediment traps at 800m for AS and EQP and at 150m for HOT.

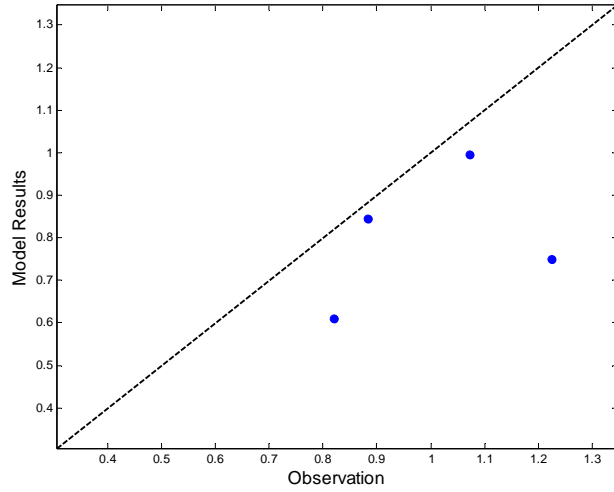
AS NO3 - Normalized to Mean Observation



AS PO4 - Normalized to Mean Observation



AS Z - Normalized to Mean Observation



AS PHY - Normalized to Mean Observation

