Trends in Global Precipitation and its Relationship to Sea Surface Salinity

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Global precipitation trends were investigated using the newly developed 20th century historical precipitation reconstruction from 1900 to 2008. The trends in two time periods, 1900 to 2008 and 1950 to 2008, showed different features in both their global averages and spatial distributions, particularly the spatial distribution. The global averages in these two time periods both showed positive trends with the trend in 1950 to 2008 being stronger.

The pentadal salinity anomalies from NOAA/NODC during 1955-59 to 2007-11 were employed to study the sea-surface salinity trend of the global average and the spatial distribution of trends. A decreasing trend was found during the period 1955 to 2011 in the Southern Ocean, equatorial and subarctic regions of the oceans. The relationship between the trends in the precipitation and sea surface salinity during the common period, 1955 to 2008, will be evaluated for global average and spatial distribution. The questions will be addressed in analyzing their relationships include:

- the temporal correlation of global averaged trends between precipitation and sea surface salinity
- the correlation of zonal averaged trends between precipitation and sea surface salinity
- the spatial correlation of the trends between precipitation and sea surface salinity

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