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# Trends and Low-frequency Variability in Reanalysis Data of the Ocean-Atmosphere System

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Temporal and latitudinal changes of natural variability, anthropogenic forcing, and meridional circulation of the climate system on time scales from years to decades are visualized by using time-latitude cross sections of atmospheric and oceanic reanalysis data of the past 60 years. We select various parameters at the Earth's surface level: air temperature, pressure, sea surface temperature, column-integrated atmospheric water vapor (IWV), surface relative humidity, and surface wind. Correlations and coincidences of trends, oscillations, and sudden changes of the climate are analyzed. We find in the NCEP/NCAR and ICOADS reanalysis data positive trends of sea surface temperature and IWV. Temporal variations of IWV and surface relative humidity correlate with the strength of the Southern polar front jet and are accompanied with the acceleration of the meridional circulation cells of the Southern Hemisphere in case of the ENSO 1997/1998. Since 2000, a rapid increase of air temperature, sea surface temperature, and IWV occurs in the Northern Hemisphere. A sudden and persistent decrease of surface pressure occurred in Antarctica. The synthesis of the climate anomaly diagrams ease the understanding of climate dynamics and is also applicable for climate model data and intercomparisons.