



## **Intra- to multi-decadal terrestrial precipitation regimes at the end of the 20<sup>th</sup> century**

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Intra- to multi-decadal (IMD) variation in terrestrial precipitation during 1901-98 was evaluated here by sampling annual precipitation rankings over 6-30 year moving time windows and converting those rankings to Mann-Whitney U statistics. Those U statistics were then used to identify the most significant concentrations of wet and dry years relative to a null hypothesis that assumes stationary climate variability. This time series analysis approach served as the basis of a climate survey method used to identify IMD precipitation regimes over continental areas, and was also used to evaluate IMD variation in time series of annual precipitation spatially averaged over those areas. These methods showed a highly significant incidence of wet years over North America during 1972-98, with 8 of the 10 wettest years of 1901-98 occurring during that 27-year period. A comparably significant incidence of late century wetness was also found over a northern Europe grid region, with 7 of the 10 wettest years occurring during 1978-98. Although significant wet and dry regimes were also found over other land areas in the last decades of the 20<sup>th</sup> century, the late century North American and northern European wet periods stood out as the most statistically significant found here during 1901-98. It is suggested that these recent wet periods are actually terrestrial evidence of a single multi-decadal precipitation mode extending across the North Atlantic, and the most observable evidence of an even broader pattern of recent North Atlantic climate change.