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Decadal climate regimes and the "hiatus"

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Yearly overlapping decadal segments of the HadCRUT (versions 3 and 4) hemispheric surface air temperature (SAT) time series (deseasonalized) have been analyzed, starting before the mid-20th century stagnation period until the most recent data delivery (for March 2017), in order to gain insight into the system's dynamic organization at this time scale. The two-dimensional (2D) SAT view (presented as so called "phase plots", where the time is running as parameter along the curve) is supplemented by corresponding analyses of the common dynamic indices of both North Atlantic and Southern Oscillation (NAO, SO), thus generating a four-dimensional (4D) data perspective. In the 2D SAT (NH vs. SH) view, several slow dynamics are found which call into mind pictures that display motions of much simpler dynamic systems, notably apparent "horseshoe" structures as well as related homoclinic and heteroclinic orbits which may be attributed to the system's extreme excursions. The 'dynamic dimensions' of the 4D view reveal stretches of surprisingly linear relationships within the context of El Nino / La Nina episodes.
Entry and exit behavior of the 1940s to 1970 stagnation period are studied in detail, as is the entry into the "hiatus" regime which appears to have happened as a result of the 1997/98 ENSO episode. A similar SAT 'shove' might be the result of the most recent, 2015/16 extreme thermal excursion and its (only partial?) return. The present estimate is +0.3 K in NH SAT and +0.1 K in SH SAT - but these dynamics did not yet come to an end, and it is thus not yet clear whether or not the "hiatus" regime of the past ca. 20 years has been left now.
Method of analysis is the Matching Pursuit technique, using a dictionary of frequency-modulated harmonic elementary signals, supported by Wavelet filtering to separate the slow (>15 months period) motions from mixed data components. Methodological uncertainties are addressed using the overlapping of data segments, and data uncertainties are discussed by means of analyses of the two HadCRUT series, as well as of an older one from the same source.