



EXTREME TEMPERATURES VERIFICATIONS ON ARGENTINA FORECAST BY NWP GFS/NCEP

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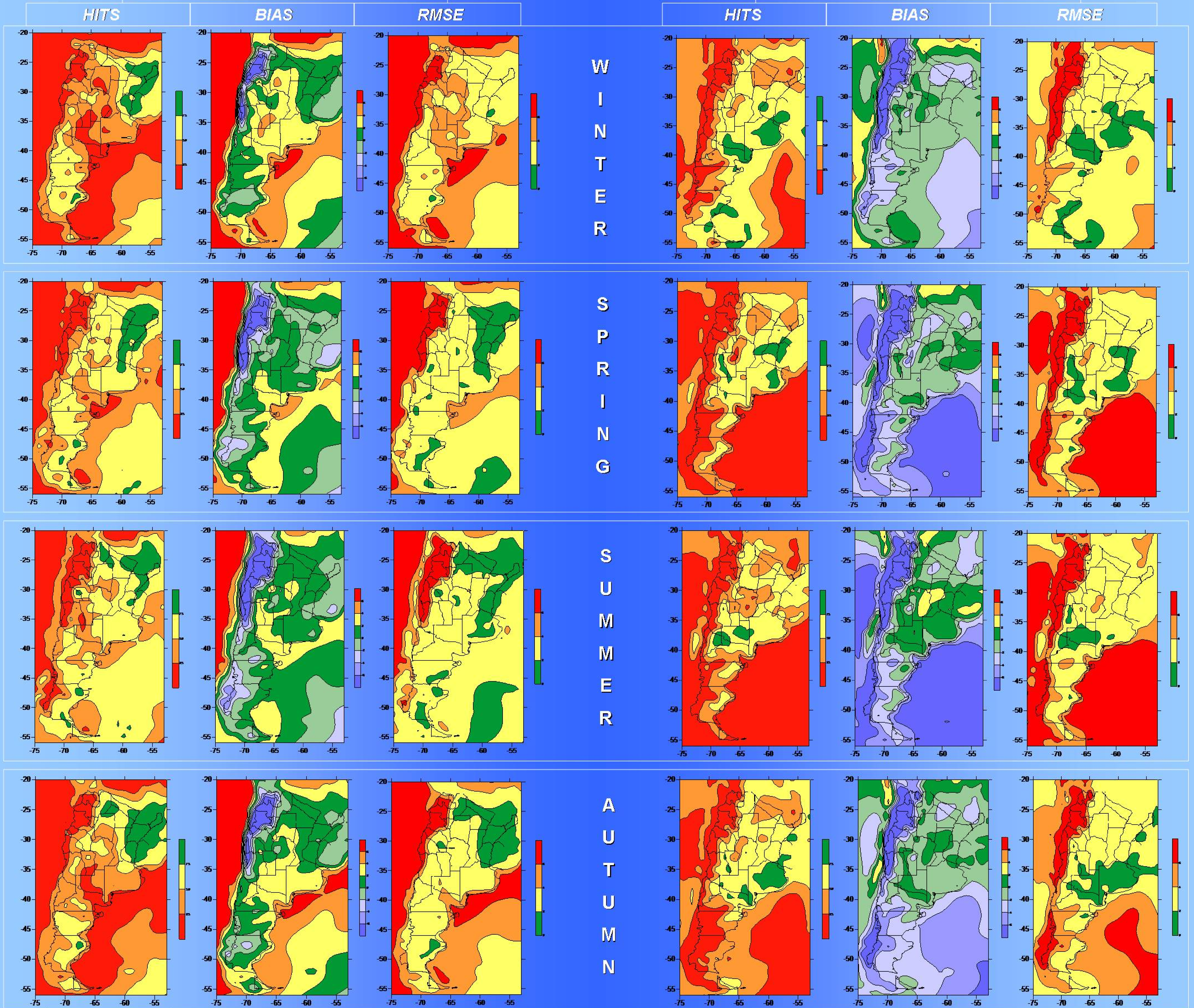
ABSTRACT

In this work, verification on extreme temperatures forecasts up to 24 hours, derived from the numerical forecast GFS/NCEP model, has been carried out in order to quantify the average seasonal error in 2006, which implies its subsequent use as maximum and minimum temperature forecast over the Argentine territory. Therefore, the most frequent statistical parameters used for model assessment have been analysed: the root mean squared error (RMSE), the bias and the success percentage.

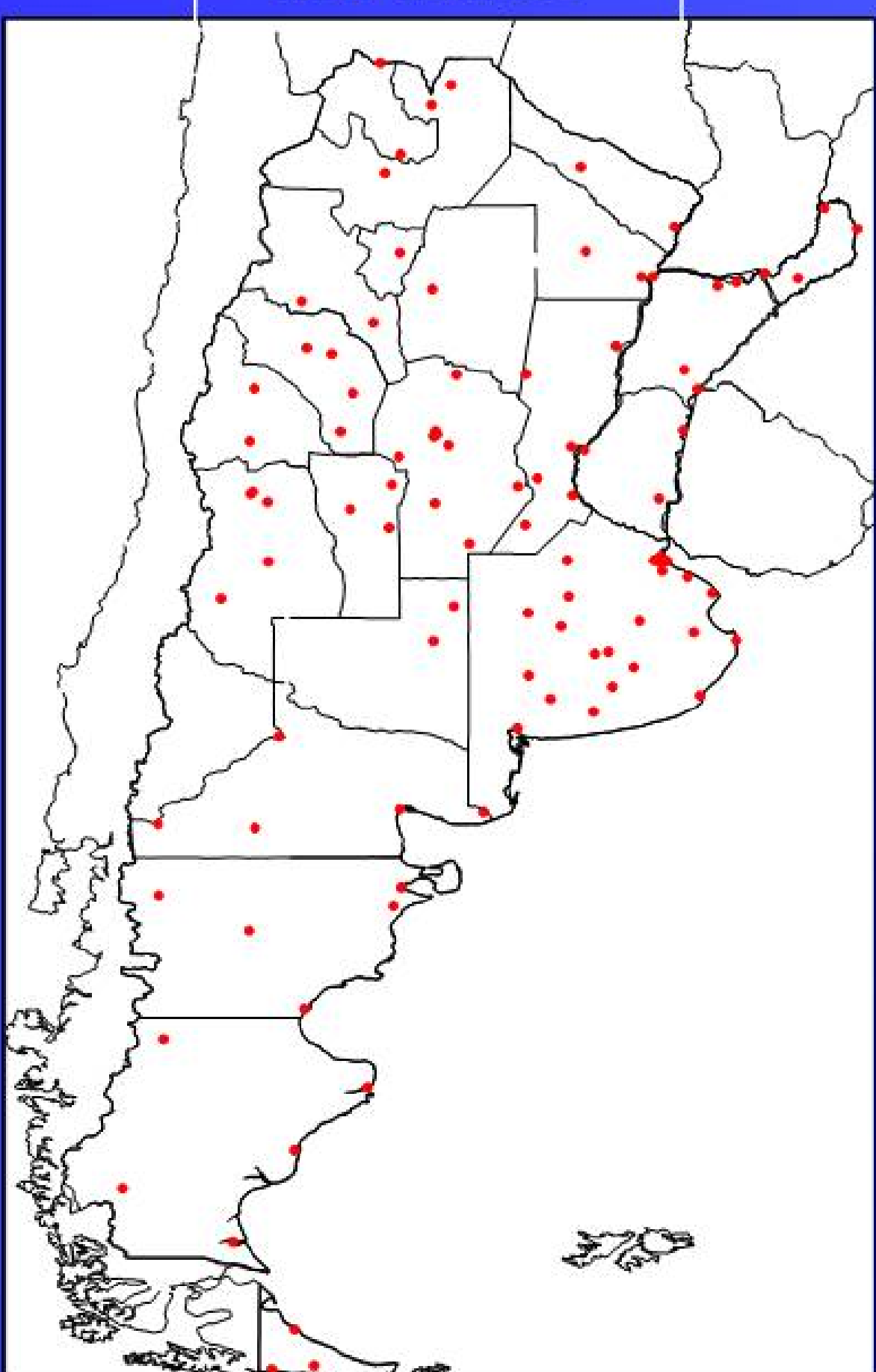
MINIMUM TEMPERATURE

$$HIT = |T_{mpF} - T_{mpO}| < 2$$

MAXIMUM TEMPERATURE



Synoptic station distribution



CONCLUSIONS:

- The analysis hitherto conducted has displayed two major problems: the inhomogeneous distribution of the synoptic stations along the Argentine territory and its vast topographic variability. In the first case, it is essential to highlight the number of stations in the central area of the territory, compared to the north and the Patagonia, where these stations are to be found in a lower degree. In the second case, in spite of a vital technological development, the appropriate orographic representation by forecasting models still constitutes a controversial matter, as in the areas near the Andes mountain range, for instance.
- The minimum temperature shows accuracy in every season over the littoral region. However, the northern part of the country presents a marked seasonal variability, with a suitable performance during summer and autumn and a more deficient behaviour during winter months. As far as the centre of the country is concerned, the model's efficiency decays during winter and autumn, gradually improving during spring and summer. In the Patagonia, there is a constant overestimation error in the northern part of the region while the remaining area presents a regular performance with a marked underestimation towards the western area throughout the year.
- The maximum temperatures display a better performance over the 35° - 40° latitudinal strip throughout the year, although its efficiency diminishes slightly during the summer. Over the littoral northern area, a poor performance takes place throughout the year, with a tendency to value underestimation. The same occurs towards the west of Córdoba and the northeast of San Luis. Over the western region of the Patagonia, the performance is highly deficient with a deep overestimation of values while the performance along the coastal strip remains regular, displaying a greater degree of suitability during winter months.
- In general, the average amplitude of extreme temperatures forecast by the GFS/NCEP model is lower than the average amplitude of the observed extreme temperatures.
- The western area of Argentina (the Andes mountain range) introduces difficulties in the application of the verifying scheme applied in this work. The use of interpolation methods dealing with grid-point observed actual data, pays no attention to the region's topography. For regions with such characteristics, it would be advisable to make use of verifying methods based on exact mechanisms of comparison between real seasonal data and the statistics forecast by the most appropriate grid-point model, or the average of the closest.