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IMPROVEMENTS TO SEASONAL FORECASTS OF EXTREME WEATHER EVENTS THROUGH THE DEVELOPMENT OF ATLANTIC SEA SURFACE TEMPERATURE PREDICTION MODELS

PART 2: PREDICTION METHODS AND WORKPLAN

1. SUMMARY OF PREDICTION METHODS

2. PREDICTION EXAMPLES

3. PROJECT AGENDA AND DELIVERABLES

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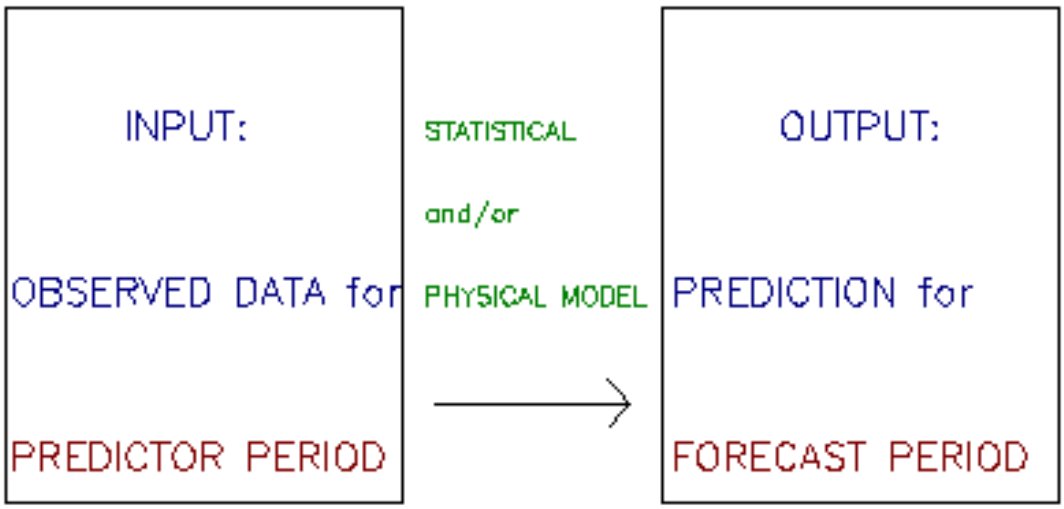
THE SEASONAL FORECAST PROCESS



NOTE: Forecasts are usually expressed as anomalies

I.E. The difference from average

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SEASONAL SST PREDICTION METHODS

1. OCEAN AND COUPLED OCEAN/ATMOSPHERE GENERAL CIRCULATION MODELS (GCM)

DISADVANTAGES OF GCM FORECASTS

(1) WHILST GCM FORECASTS ARE POTENTIALLY THE BEST, THEY ARE SLOW AND EXPENSIVE TO PRODUCE

(2) GCMS ARE STILL UNDER DEVELOPMENT AND FORECASTS ARE SUBJECT TO SUBSTANTIAL SYSTEMATIC ERRORS

2. PERSISTENCE

STATISTICAL METHODS

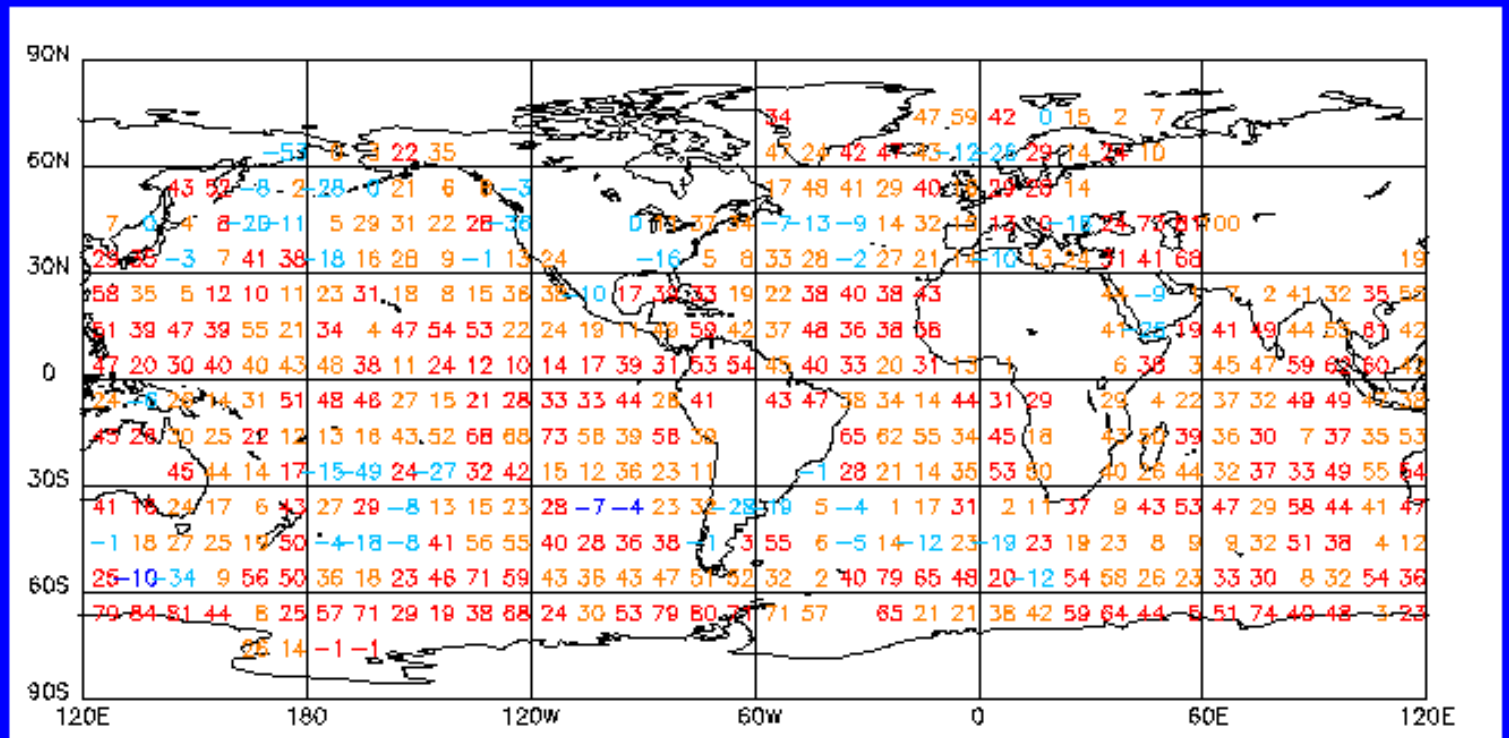
3. REGRESSION PREDICTIONS USING DATA FROM NEARBY AREAS

4. PREDICTIONS OF OCEAN SCALE PATTERNS USING CCA AND SVD

ADVANTAGES OF STATISTICAL METHODS

FORECASTS CAN BE PRODUCED CHEAPLY AND QUICKLY

Stepwise LR predictions of Jul–Aug–Sep SST from Jan–Feb SST
Jackknife correlation skill 1949–1998



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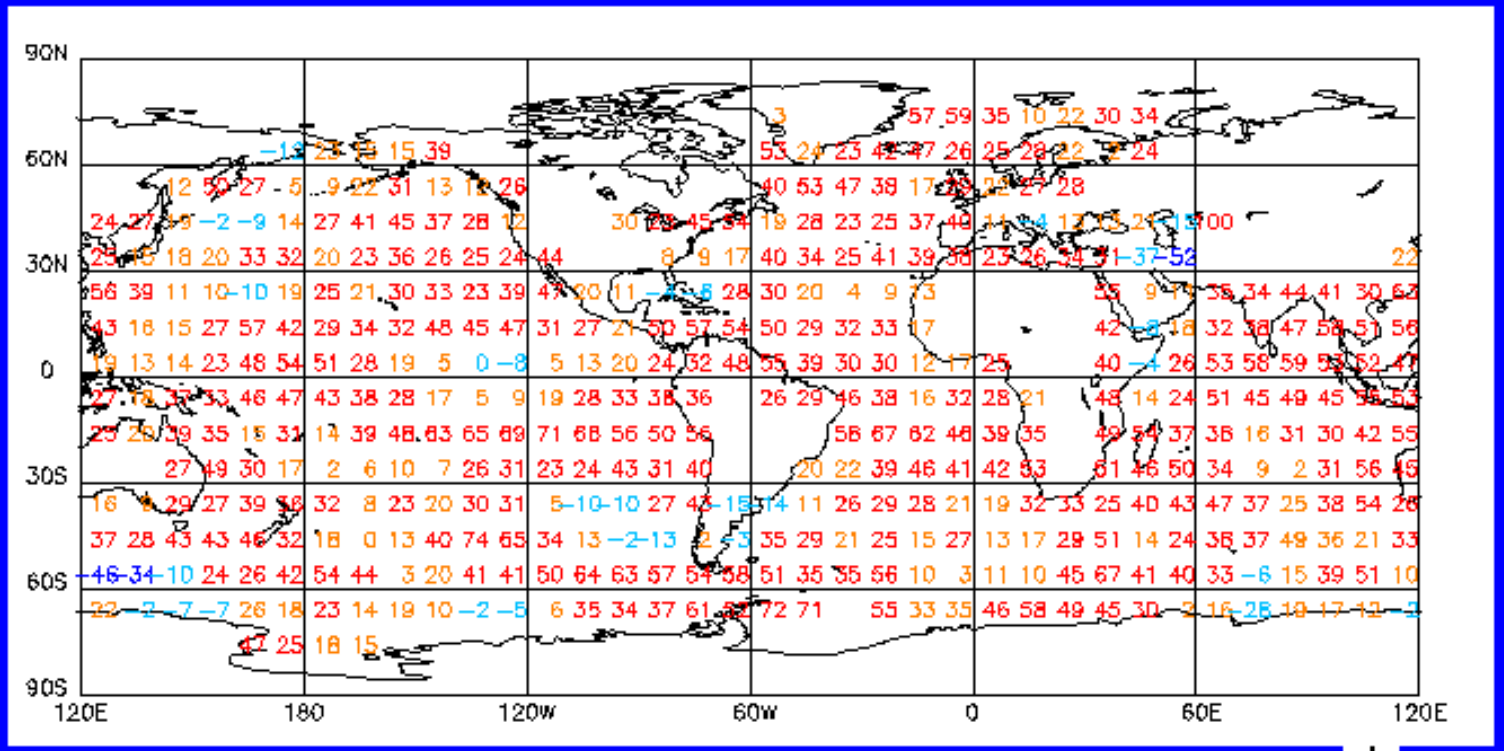
Persistence predictions of Jul–Aug–Sep SST from Jan–Feb SST correlation skill 1949–1998



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Assessment of Jackknife CCA SST forecasts from 130E–20W,30N–20S SST
Predictions of July–September SST from March–April SST 1949–1998
Correlation × 100

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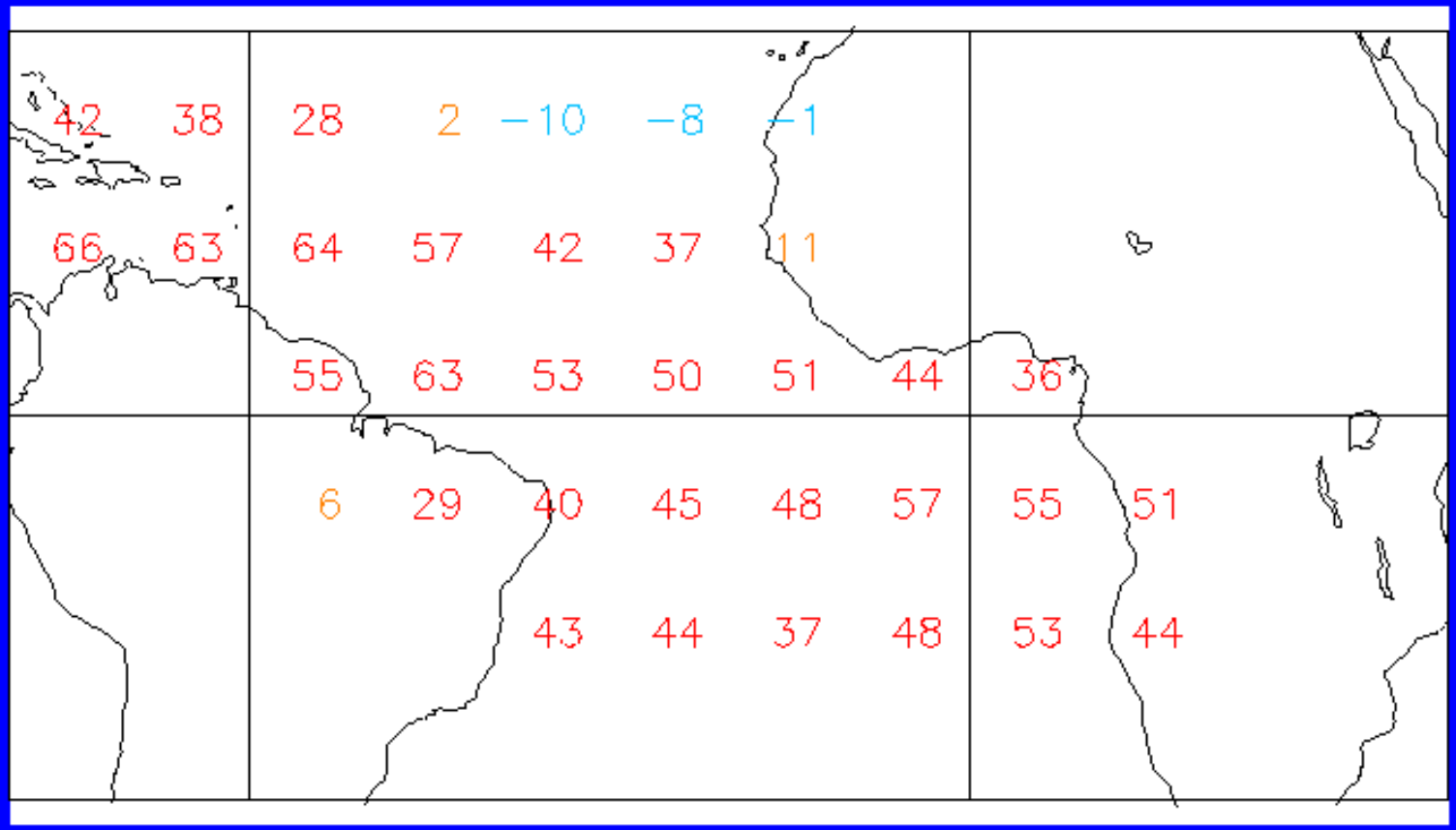

Assessment of Jackknife CCA SST forecasts from 80W–30E,20N–80N SST
Predictions of July–August SST from Jan–Feb SST 1949–1998
Correlation x 100

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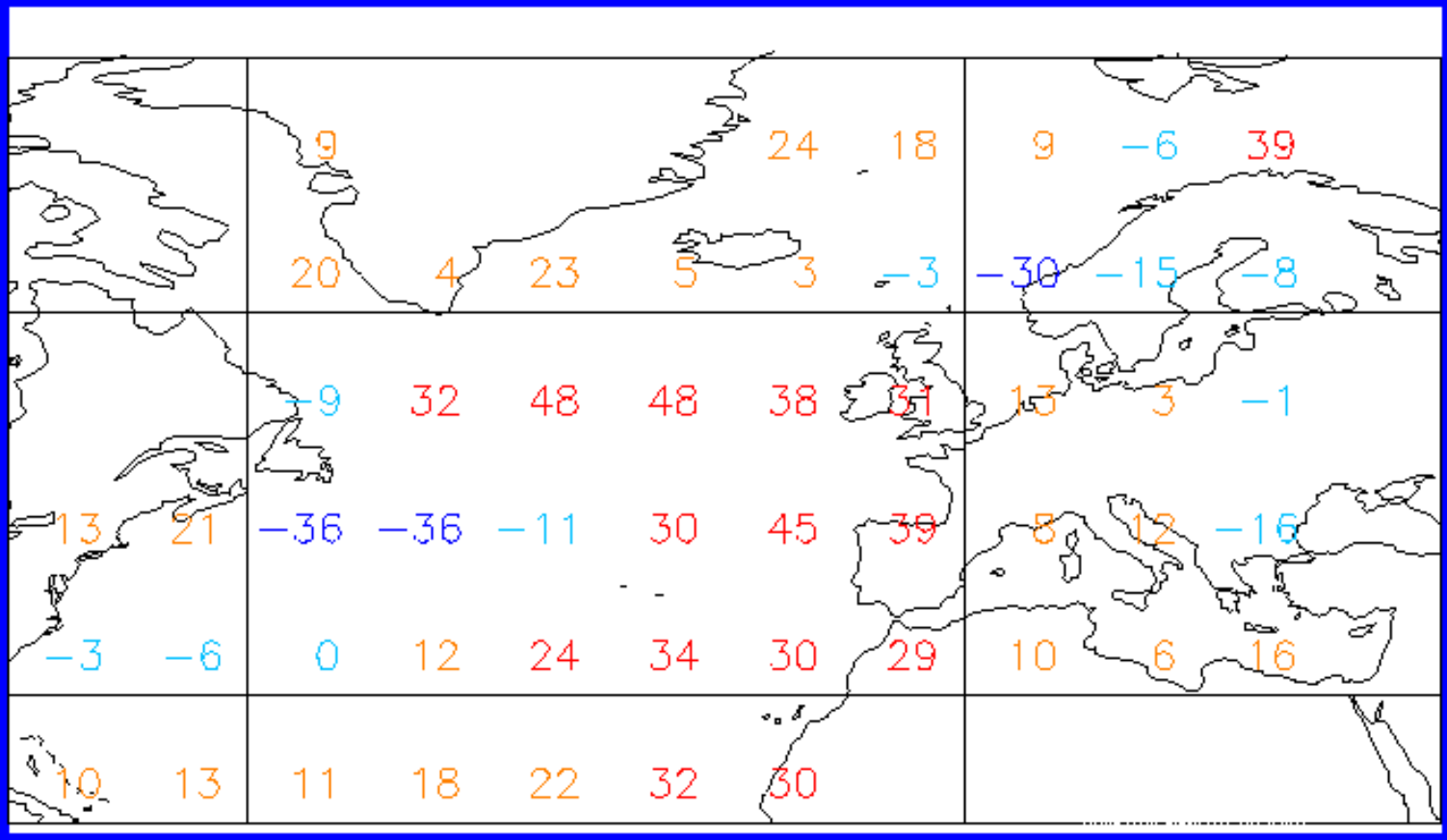

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DELIVERABLES

1. A REPORT ON THE SKILL AND EFFECTIVENESS OF STATISTICAL ATLANTIC SST PREDICTION. THE REPORT WILL DISCUSS THE VIABILITY AND POTENTIAL OF USING SST TO DRIVE SEASONAL WEATHER PREDICTION MODELS

2. THE PROJECT WILL PROVIDE A HINDCAST DATASET OF ATLANTIC SSTS WHICH WILL PROVIDE EFFECTIVE INPUT FOR WEATHER PREDICTION MODELS

3. ATLANTIC SST PREDICTIONS RESULTING FROM THE PROJECT WILL BE MADE AVAILABLE AS INPUT TO THE TSUNAMI TROPICAL CYCLONE MODEL POTENTIALLY IMPROVING THE SKILL OF THESE FORECASTS

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THE PROJECT AGENDA

1. INVESTIGATE SKILL OF PERSISTENCE AND STATISTICAL PREDICTION METHODS FOR ALL SEASONS WITH FORECAST LEAD TIMES OF 0–15 MONTHS

2. ASSESS WHAT SIZE REGIONS TO USE

3. ASSESS SKILL DEPENDENCY ON CLIMATE STATE
   EG. DEPENDENCY ON EL NINO

4. FIND HOW TO COMBINE FORECASTS FROM THE DIFFERENT METHODS