Verification of the 1999 Precipitation Forecasts

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Introduction

- CIMH given mandate to produce precipitation outlooks for the region at the first Caribbean Outlook Forum in 1998
- Regional met offices and research groups agreed to assist in this effort
- In 1999 six outlooks were produced and made available on the CIMH homepage

Forecast procedure

- Starts with an examination of the three-month precipitation forecast from the three IRI models and the ECMWF model
- Model output from
  - IRI - anomalous precipitation as a percentage of average seasonal rainfall
  - ECMWF - probabilities of above or below normal rainfall

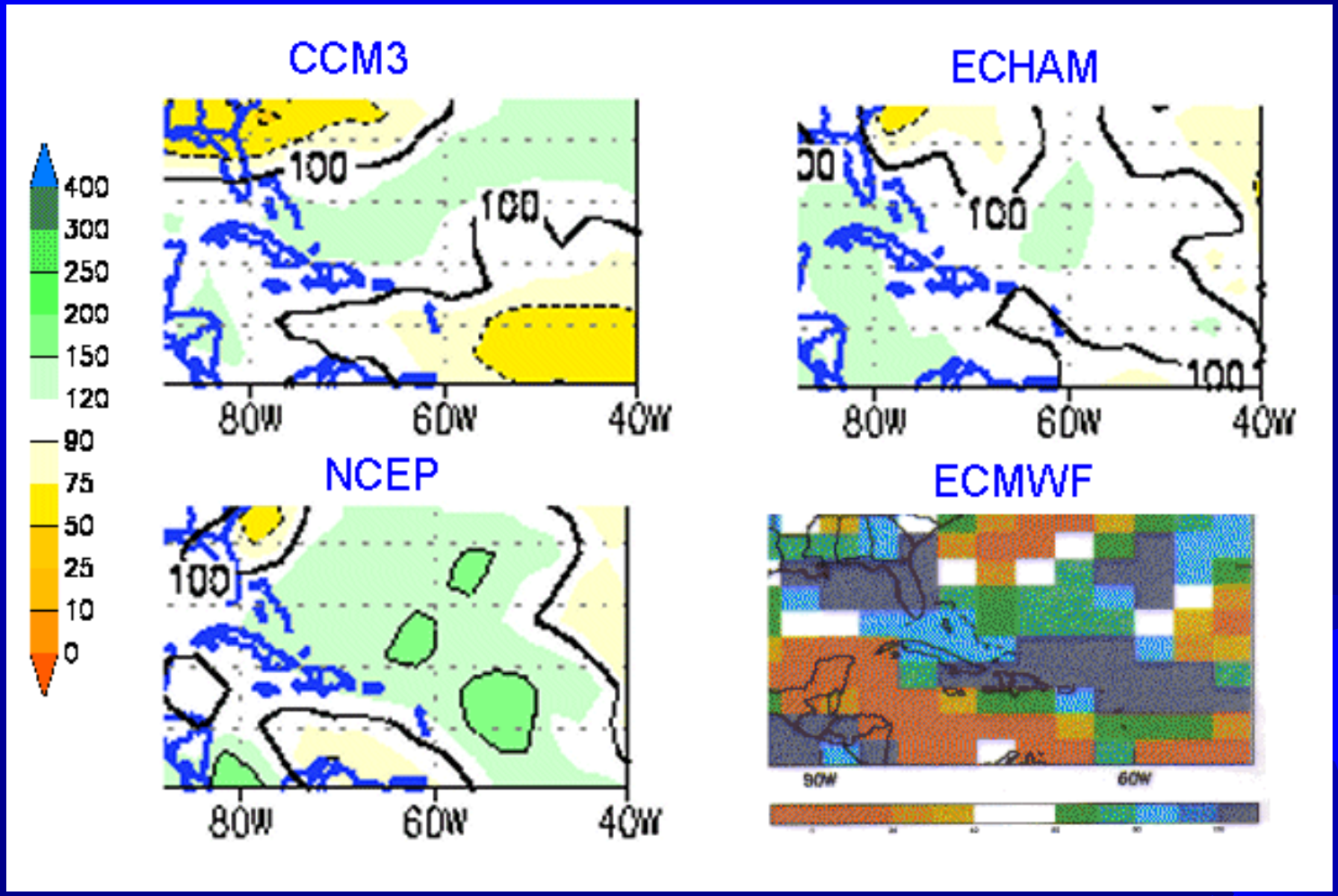
Forecast procedure

- Probabilities then estimated based on:
  - forecast anomalous precipitation from the IRI models
  - probabilities from the ECMWF model
  - level of agreement between the different models
  - subjective confidence in the different predictions based on the current conditions and knowledge of the local climatic conditions

Forecast procedure

- Probabilities provided by the various contributors are consulted to present a consistent forecast
- Outlook is presented in the form of a tercile probability distribution indicating the likelihood of below-, near-, or above normal rainfall for the various sub-regions

Extracts of model forecasts



Verification

- Forecast verification is essential for monitoring forecast reliability and for ensuring credibility for users
- Current probabilistic format of the precipitation outlook makes it difficult to develop a meaningful quantitative measure of its performance

Verification

- CIMH has adopted a simple approach to verify the probability outlooks by computing the anomalies
- For verification any value falling within 10% of the long-term average is considered normal, while larger positive (negative) anomalies are considered as above (below) normal

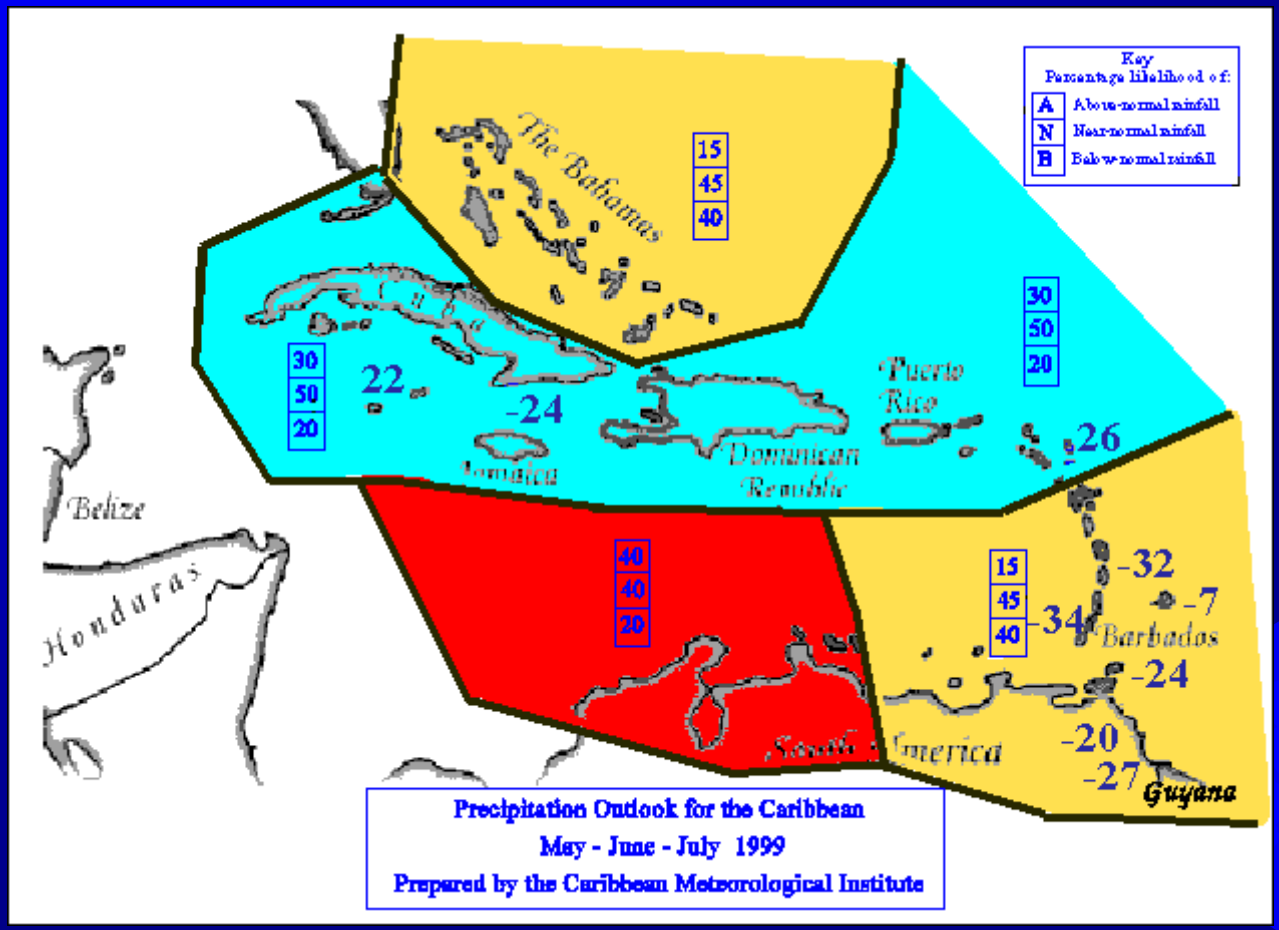
Table 1a. Selected Rainfall Anomalies - 1999

Country	Station Name	M-J-J	J-A-S	S-O-N	N-D
Guyana	Georgetown	-27	20	-49	-9
	Timehri	-20	24	37	22
Trinidad	Piarco	-26	-14	7	9
Tobago	Crown Point	-24	10	13	22
Grenada	Point Salines	-34	-8	-8	3
St. Vincent	E.T. Joshua	3	-10	-1	12
Barbados	CIMH	19	40	32	59
	Lears	-11	8	-11	6
	Union Hall	-16	-6	-6	33
	GAA	-19	6	-38	4
	Haggatts	-4	2	-16	30
	St. Nicholas	1	8	-6	58
	BARBADOS	-5	10	-8	32
St. Lucia	Hewanorra	-17	6	-19	-42
	G.F.L. Charles	-25	2	-22	-14
	Saltibus	-32	-4	-10	-19
Dominica	Melville Hall	-15	-29	-16	-28
	Canefield	5	-30	-1	28
Antigua	V.C. Bird	26	-13	132	200

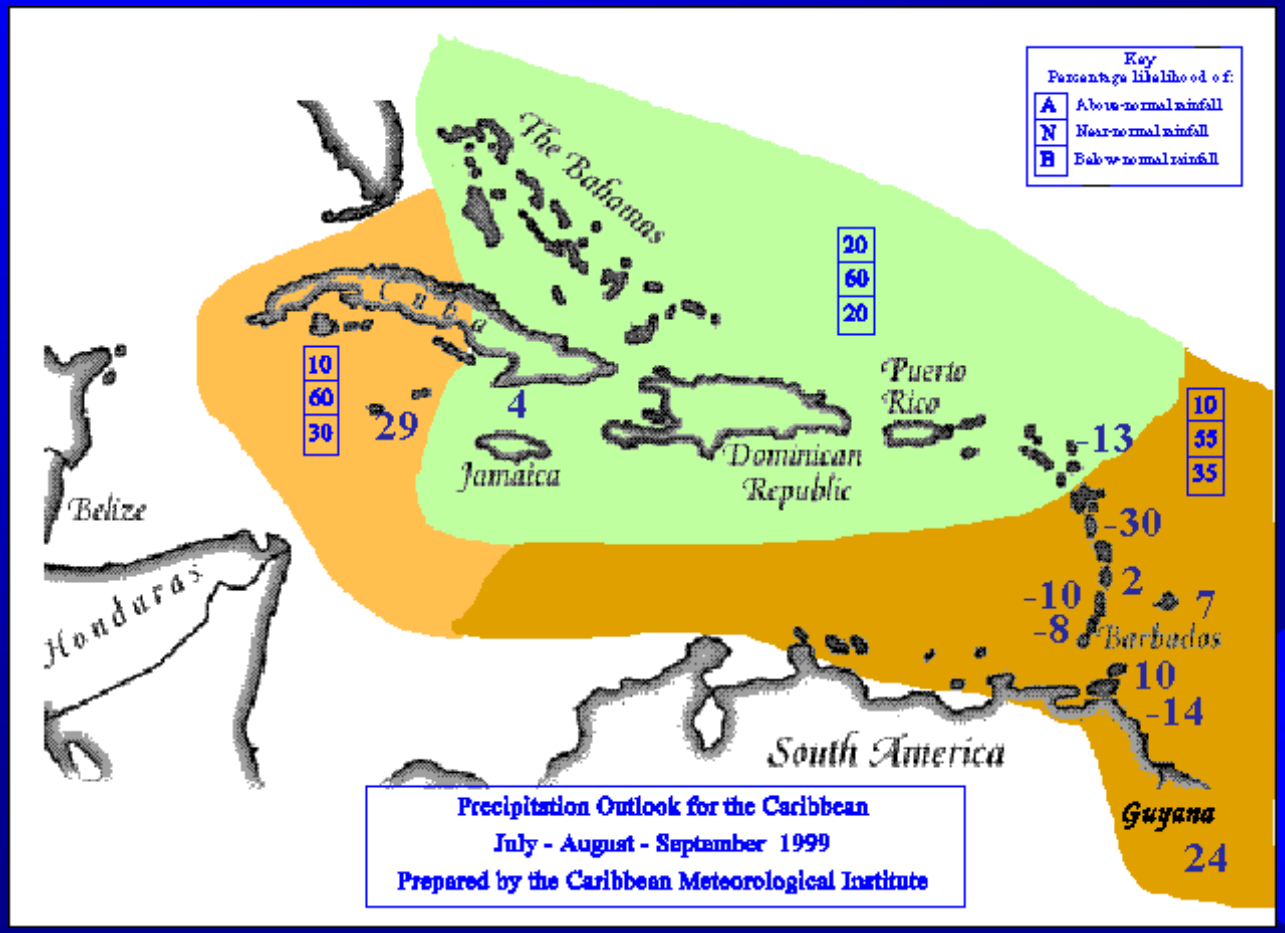
Table 1b. Selected Rainfall Anomalies - 1999

Country	Station Name	M-J-J	J-A-S	S-O-N	N-D
Jamaica	Hanover	-27	-11	9	-28
	Westmoreland	-40	-28	-25	6
	Manchester	-12	32	32	16
	St. Elizabeth	-8	12	19	-11
	Clarendon	-46	13	65	59
	St. Catherine	-45	15	22	-26
	Trelawny	5	19	-5	-31
	St. James	-16	-5	-13	-36
	St. Ann	-19	55	-2	-46
	St. Mary	-33	44	13	-32
	Portland	-15	-26	23	-25
	St. Thomas	-39	-15	26	-8
	Kingston/St. Andrew	-11	47	9	-44
	JAMAICA	-24	4	14	-22
Cayman	Owen Roberts	22	29	93	38

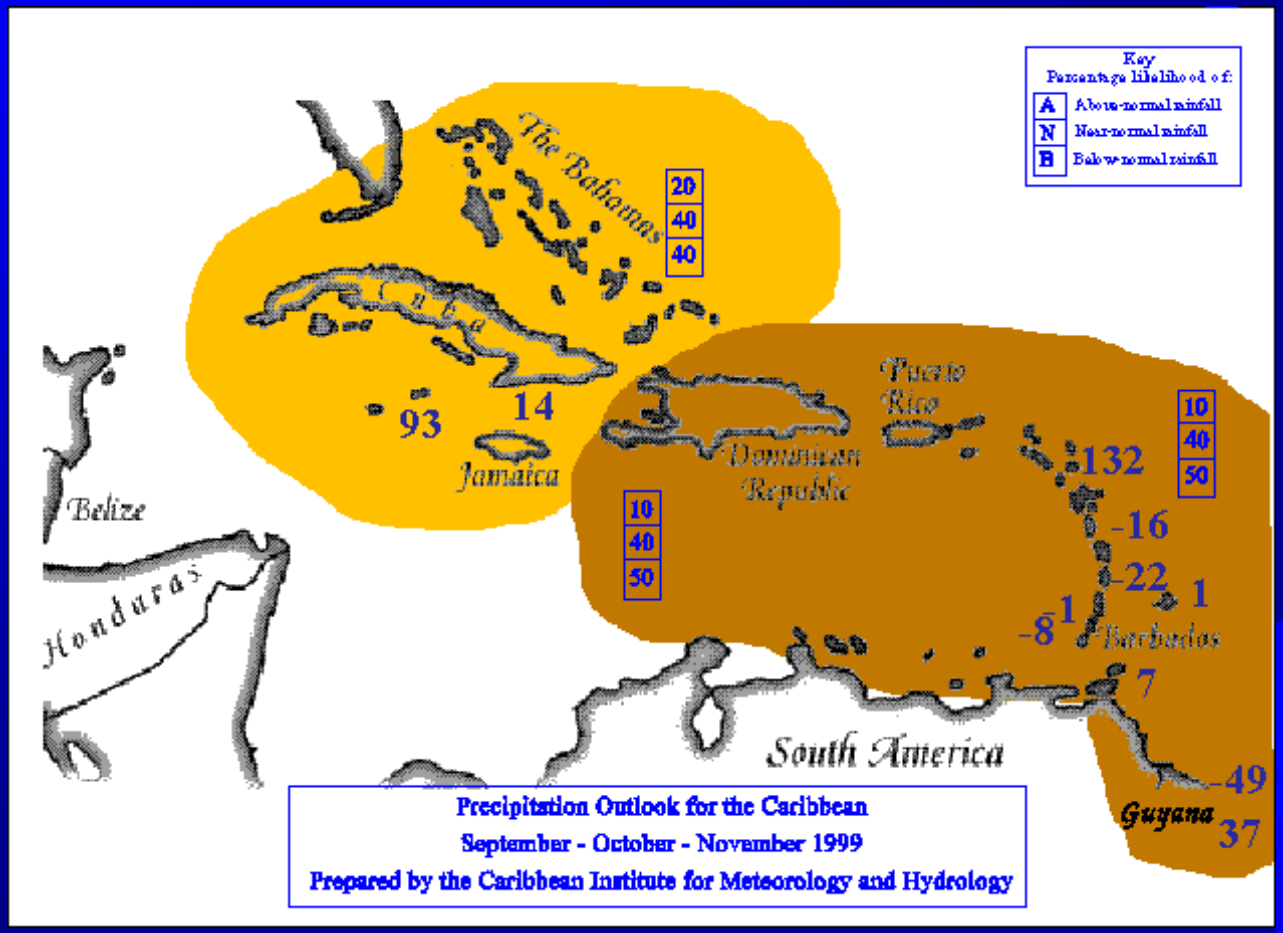
M-J-J outlook and anomalies



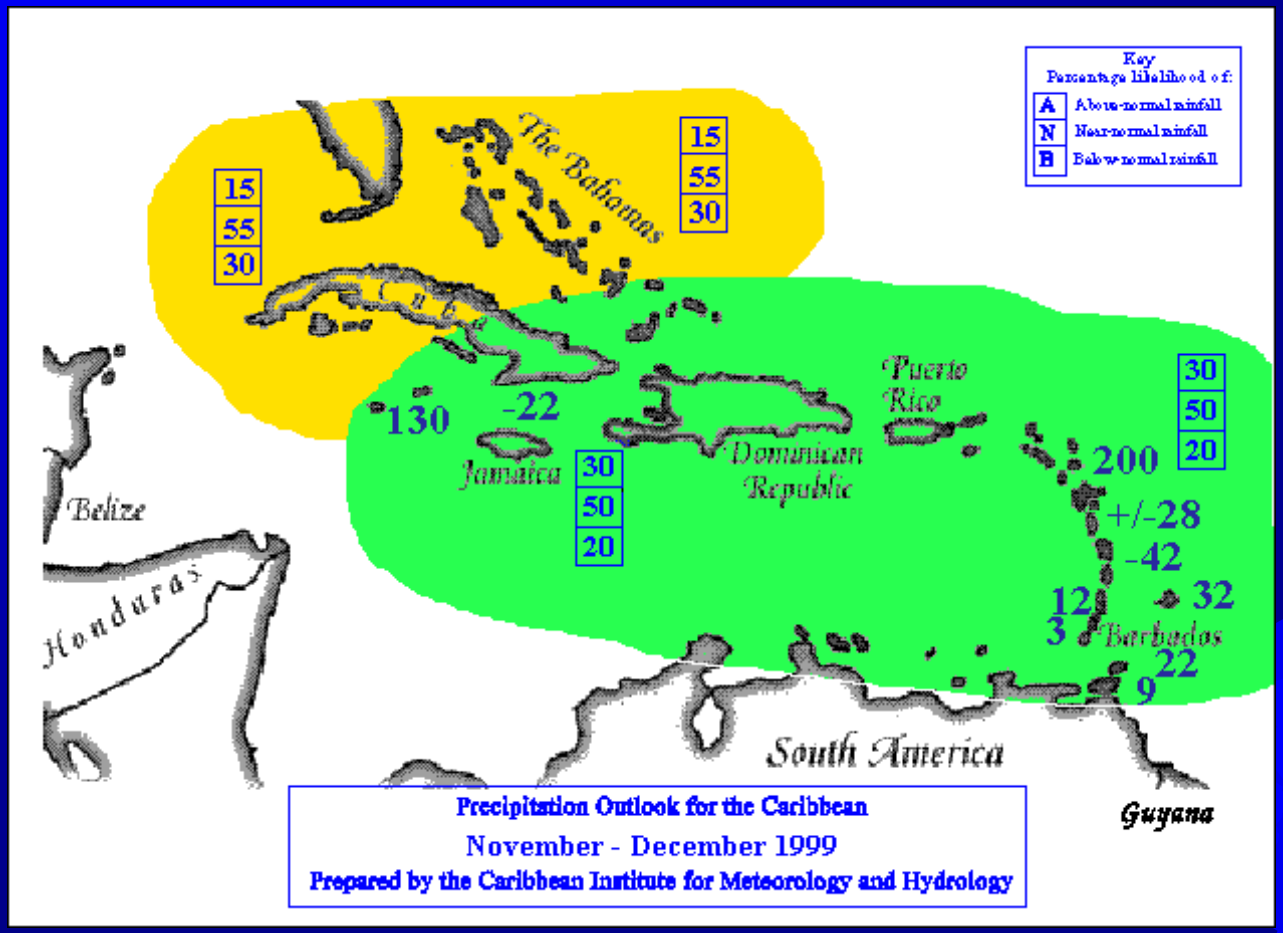
J-A-S outlook and anomalies



S-O-N outlook and anomalies



N-D outlook and anomalies



Climate model performance

- An attempt was made to assess and compare the performances of the models by comparing the anomalies with the various model forecasts
- At this point no clear signals have been established.

Summary and conclusions

- The CIMH is mandated to produce three-month precipitation probability outlooks to the region and has been undertaking this task since 1998
- Outlooks are produced by utilising precipitation forecasts from four climate models and input from regional meteorological services and research groups

Summary and conclusions

- During 1999 six forecasts were prepared and distributed via the CIMH homepage
- Attempts at verification of these forecasts using anomalies indicate that there may be some skill (subjective) in the forecasts
- Local variations in rainfall anomalies and current method of presentation of forecast are providing a challenge to verification.

Summary and conclusions

- An assessment of the performance of the models over the region must be undertaken
- Information on performance of models would assist in determining probabilities
- Assessment of model and validation of the regional outlooks cannot be undertaken without observational data

Summary and conclusions

- It is important that countries supply the CIMH with rainfall data on a regular and timely basis
- Some met services and agencies continue to provide input to the precipitation outlook
- It is vital that individual countries continue to contribute to the outlooks