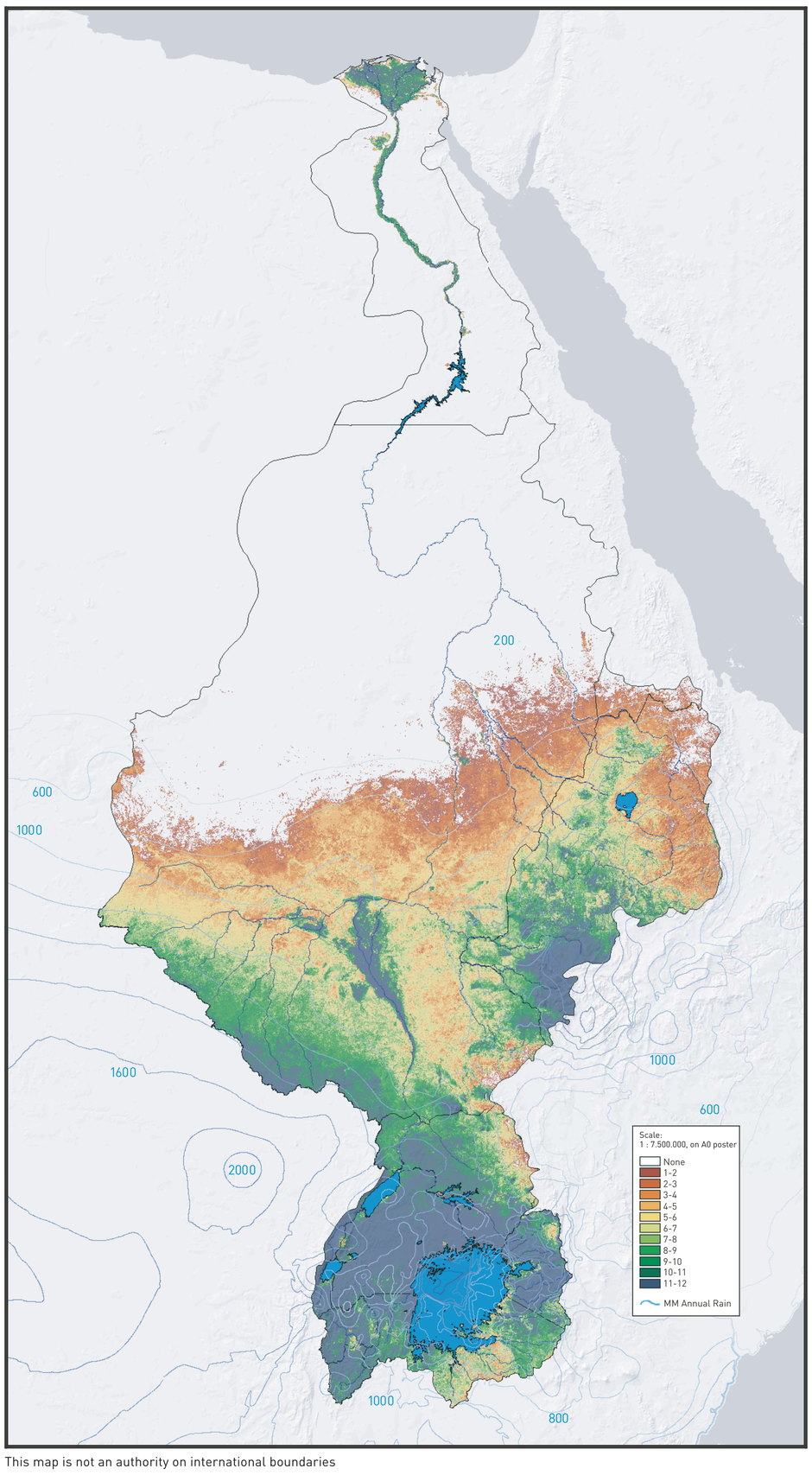
OBSERVED BIOMASS PRODUCTION

SPATIAL RELATIONSHIP WITH GREEN AND BLUE WATER FLOWS IN THE NILE BASIN

Observed Length of Growing Period (Modis 2000-2004)



This map is not an authority on international boundaries

National Biomass Productions in accumulated "green" km2/year

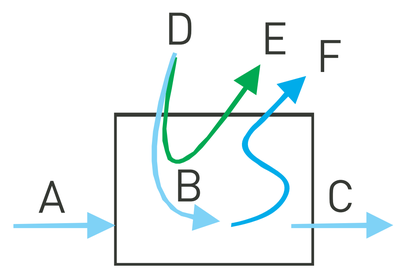
National Water Balance Components

	Water Balance Components in BCM/Yr						Estimated Proportionalities for Water Flows Used in Biomass Productions		
Country	A	B	C	D	Blue Use F	Green Use (E=D-B)	Denominator (Green Use + Blue Use)	Blue Use %	Green Use %
Burundi	0	2.6	2.6	18	<1	15.4	15.4	0	100
DR Congo	0	4	4	26	<1	22	22	0	100
Egypt	65.5	0	10	2	45.5 (*1)	2	47.5	96	4
Eritrea	0	1	1	15	<1	14	14	0	100
Ethiopia	0	77.7	77.7	559	<1	481.3	481.3	0	100
Kenya	0	8.4	8.4	78	<1	69.6	69.6	<1	100
Rwanda	2.6	3.7	6.3	26	<1	22.3	22.3	<1	100
Sudan	108	10	65.5	1214	53 (*2)	1204	1257	4	96
Tanzania	6.3	3.2	14.9	154	<1	150.8	150.8	<1	100
Uganda	23.3	30	36	342	17.3	312	329.3	5	95

*1 Adjusted for Approximately 10 BCM evaporation loss annually over Lake Nasser.

*2 Maximum 18.5 BCM may be used in irrigated agriculture, the remaining is lost in evaporation associated with dams and transpiration from wetlands.

Definition of Natural Water Balance Components



A = Incoming streamflow
B = Internally generated streamflow
C = Outgoing streamflow
D = Precipitation
E = Green water in biomass production
F = Blue water in biomass production

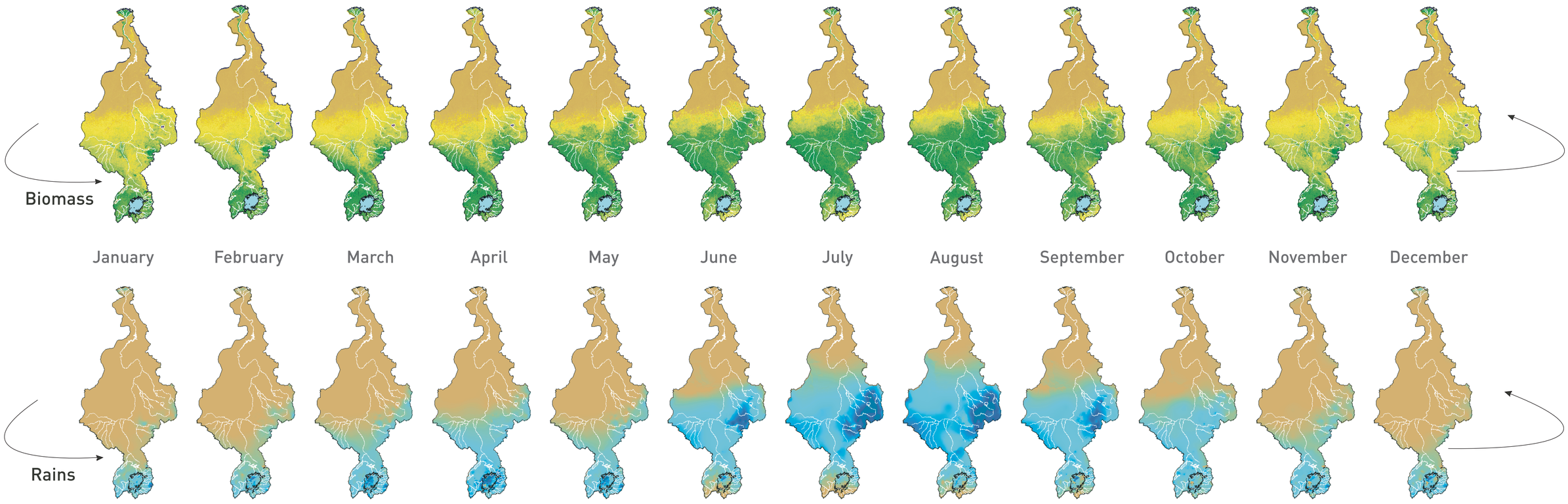
About this poster

This poster relates volumetric water quantities in the Nile basin to national biomass production. The biomass has been calculated using satellite remote sensing data. Satellite data are as observed by the MODIS Terra over the period 2000-2004.

Annual volumes of rainfall in the Nile basin are calculated for the respective portion of the basin in the Nile riparian countries. Rain volumes are set out against average stream flow volumes in a simple surface water balance. All stream flow losses are considered to be consumed in natural wetlands or irrigated agriculture. Hence reduced downstream flow is presented as a direct blue water contribution to the observed biomass production. Remaining biomass productions unaccounted for by differences in stream flow, are considered as rainfed. Hence these rainfed conditions represent the green water in the observed biomass production. Evaporation losses over lakes for this case were simplified as being neutral against over lake rainfall, unless mentioned otherwise.

The biomass production is calculated using the Normalized Difference Vegetation Index (NDVI). The NDVI is calculated on a monthly basis and subsequently expressed as cumulative green square kilometers per year. A typical NDVI threshold is applied to distinguish between "green" healthy growing vegetation and other conditions. Circles as drawn are proportional to the scale of the map. The circles are set to obtain the same area as the respective country basin part in the map, when reaching the agronomic condition of 6 months/year "green" healthy growing vegetation at all locations. Oversized or undersized circles in comparison to the map areas respectively indicate whether 6 months growth is met or not.

Where this approach searches to express an abstract, proportional and strictly regional relationship between 'areas' of active biomass production and 'volumes' of available water, it clearly makes no distinction between the types and quality of vegetation. As such it does <u>not</u> directly or proportionally express values of agricultural production



Information Products for Nile Basin Water Resources Management

GCP/INT/945/ITA

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burundi d.r. congo egypt eritrea ethiopia kenya rwanda sudan tanzania uganda

The project is intended to strengthen the ability of the governments of the Nile Riparian States to take informed decisions on water resources policy and management matters regarding the common Nile resource. It includes a major capacity building component. The project is implemented under the umbrella of the Nile Basin Initiative.

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A project sponsored by the Government of Italy