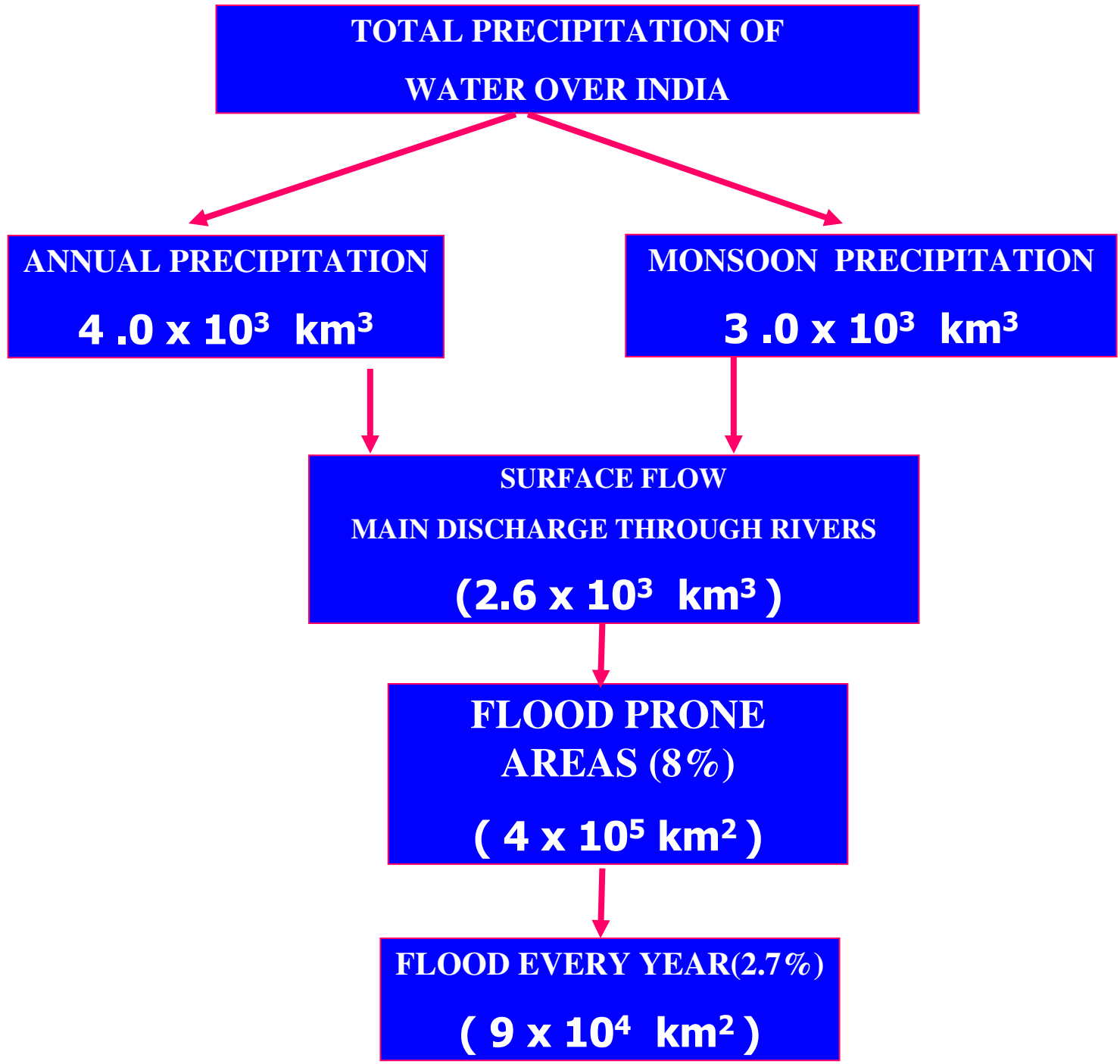


NAME : SURINDER KAUR
COUNTRY : INDIA

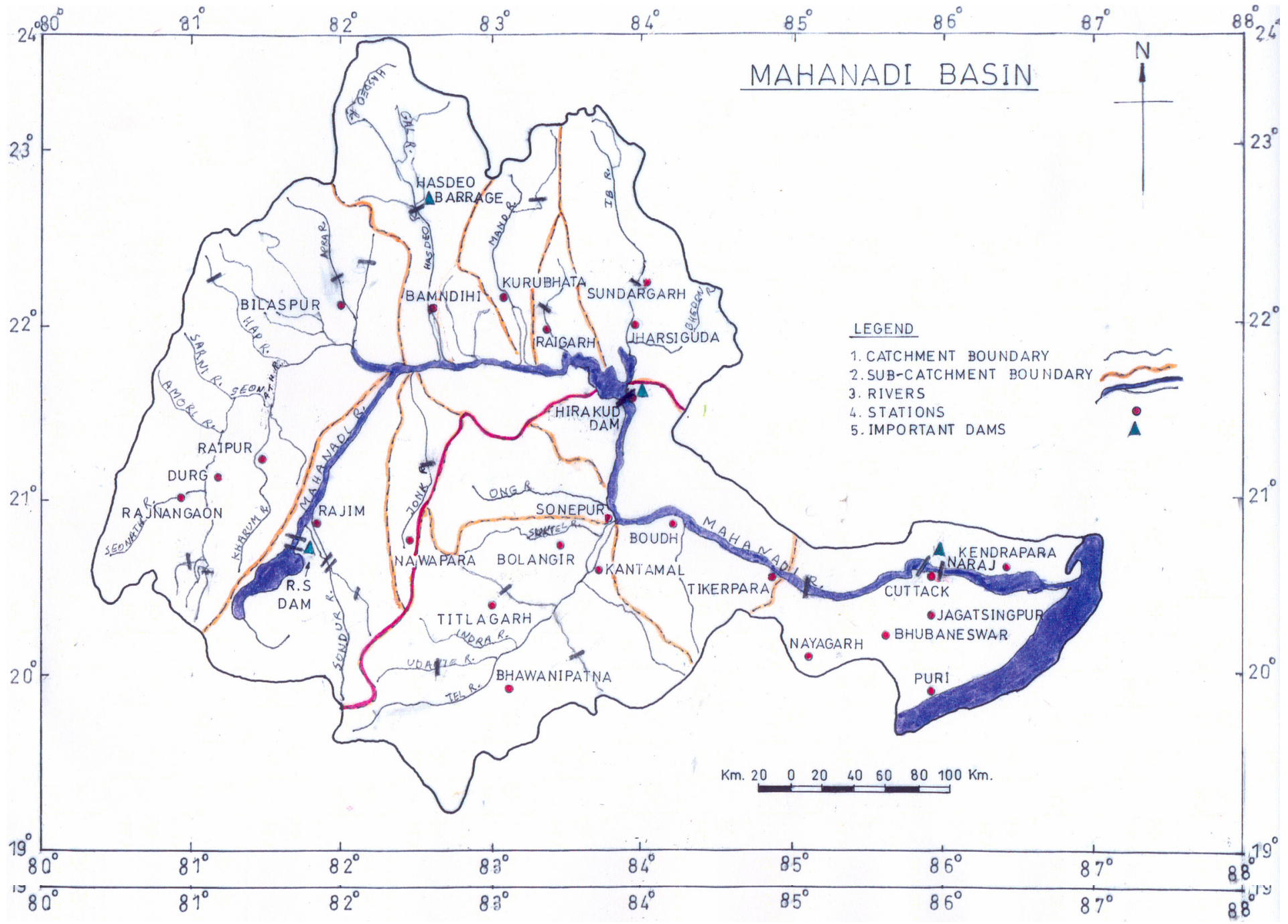
RIVER BASIN: MAHANADI

MAJOR ISSUES

FLOOD FORECASTING
QUANTITATIVE
PRECIPITATION FORECAST(QPF)
SUB CATCHMENTWISE



MAHANADI BASIN



MAHANADI BASIN

**TYPE – INTER- STATE RIVER SYSTEM
(MAINLY ORISSA & CHATISGARH)
CATCHMENT AREA – 1,41,600KM²
UPPER MAHANADI – 83,400KM²
LOWER MAHANADI – 58,200 KM²
TOTAL LENGTH – 851 KM
CHATISGARH – 357 KM
ORISSA – 494**

MAJOR PROJECTS

- ❖ HASDEO BARRAGE
- ❖ HIRAKUD DAM
- ❖ NARAJ BARRAGE
- ❖ RAVI SHANKAR DAM

FLOOD PROBLEMS IN MAHANADI

■ THE BASIN IS DIVIDED IN TWO REACHES

VIZ UPPER MAHANADI AND LOWER MAHANADI

UPPER MAHANADI BASIN TERRAIN IS MOUNTAINOUS WITH STEEP TO MODERATE SLOPES AND DOES NOT HAVE SIGNIFICANT FLOOD PROBLEM.

■ HIRAKUD DAM HELPS IN FLOOD MANAGEMENT IN LOWER MAHANADI ONLY DURING EARLY PERIOD OF MONSOON.

■ THE PROBLEM GETS AGGREGATED BY

-HIGH TIDE FROM SEA

-SUSTAINED HIGH STAGES IN SEA

-HEAVY PRECIPITATION IN THE COASTAL AREA DUE TO CYCLONIC STORMS

METEOROLOGICAL SITUATIONS LEADING TO FLOOD

MONSOON DEPRESSIONS.

LAND LOWS.

CYCLONES.

ACTIVE MONSOON CONDITION.

STORM AT ESTUARY OF RIVER.

METEOROLOGICAL INPUT FOR FLOOD FORECASTING

- ❖ **PREVAILING SYNOPTIC WEATHER SITUATION**
- ❖ **CATCHMENT / SUB-CATCHMENTWISE AREAL RAINFALL OBSERVED DURING THE PAST 24- HRS.**
- ❖ **STATIONWISE SIGNIFICANT RAINFALL DURING THE PAST 24-HRS.**
- ❖ **QUANTITATIVE PRECIPITATION FORECAST**
- ❖ **HEAVY RAINFALL WARNING**

QUANTITATIVE PRECIPITATION FORECAST (QPF)

**QUANTITY OF PRECIPITATION EXPECTED
AT A POINT OR OVER AN AREA DURING A
SPECIFIED DURATION**

METHODS

- **DYNAMICAL**
- **STATISTICAL**

STATISTICAL METHOD

STATISTICAL ANALOGUES

QPF (mm)

1- 10

11-25

26-50

51-100

> 100

RAINGAUGE STATIONS IN MAHANADI BASIN

NO OF STATIONS

CLIMATE STN -

IMD – 42

**CWC – 35 (RECEPTION OF DATA THROUGH VSAT
OF IMD)**

AVERAGE ANNUAL RAINFALL – ABOUT 140 cm

**MORE THAN 75% IS RECEIVED DURING MONSOON
RAINFALL**

REQUIREMENT OF PROPOSED PROJECT

DEVELOPMENT OF MODEL OF QPF FOR MAHANADI BASIN

- ❑ STATISTICAL DOWNSCALING TECHNIQUES FOR QPF AND POP (MOS, PPM, NEURAL NETWORK)**
- ❑ DYNAMICAL MODEL**
- ❑ LOCATION SPECIFIC FORECAST**
- ❑ AREAL PRECIPITATION FORECAST**