

TIP DATA PROCESSING ACTIVITIES IN POLAND

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1. System Configuration

The Institute of Meteorology and Water Management (IMWM) in Krakow is receiving TIP data transmitted at the range 137 MHz (VHF-BEACON) by NOAA-7,8 satellites.

TIP receiving station, designed and built in the Institute, is composed of:

- Yagi antenna with autotracking device,
- preamplifier,
- receiver,
- demodulator,
- bit and frame synchronizer.

The receiving station is connected to computer system via an interface.

The hardware system for preprocessing of TIP data is based on the central processor MERA-60 with 32k words operating memory. This system contains peripherals and additional magnetic tape transports and disc drives (see Figure 1).

The hardware system will be used also for producing vertical temperature profiles. Limited capacity of processing memory allows the processing of data from only one or two passes in the radio horizon range of the Krakow receiving station.

2. Data Processing

The processing will be composed of the following steps (see Figure 2):

- a. Preprocessing of TIP data.
 - verification of TIP data correctness and elimination of erroneous or unidentified data,
 - satellite identification, determination of pass direction and start times of calibration cycles for HIRS, MSU and SSU,
 - calibration of HIRS, MSU and SSU data using algorithm presented by L. Lauritson (1979),
 - geographical location of IFOVs for HIRS, MSU and SSU (IMWM Internal Report, 1983).
- b. Extraction of proper data subset.

The subset will be composed of one "box" of 9x7 HIRS scanning positions by interpolation to the HIRS scan position.
- c. Cloud effect correction.

For the cloud effect correction, the algorithm prepared by L.M. McMillan (1978) will be applied.

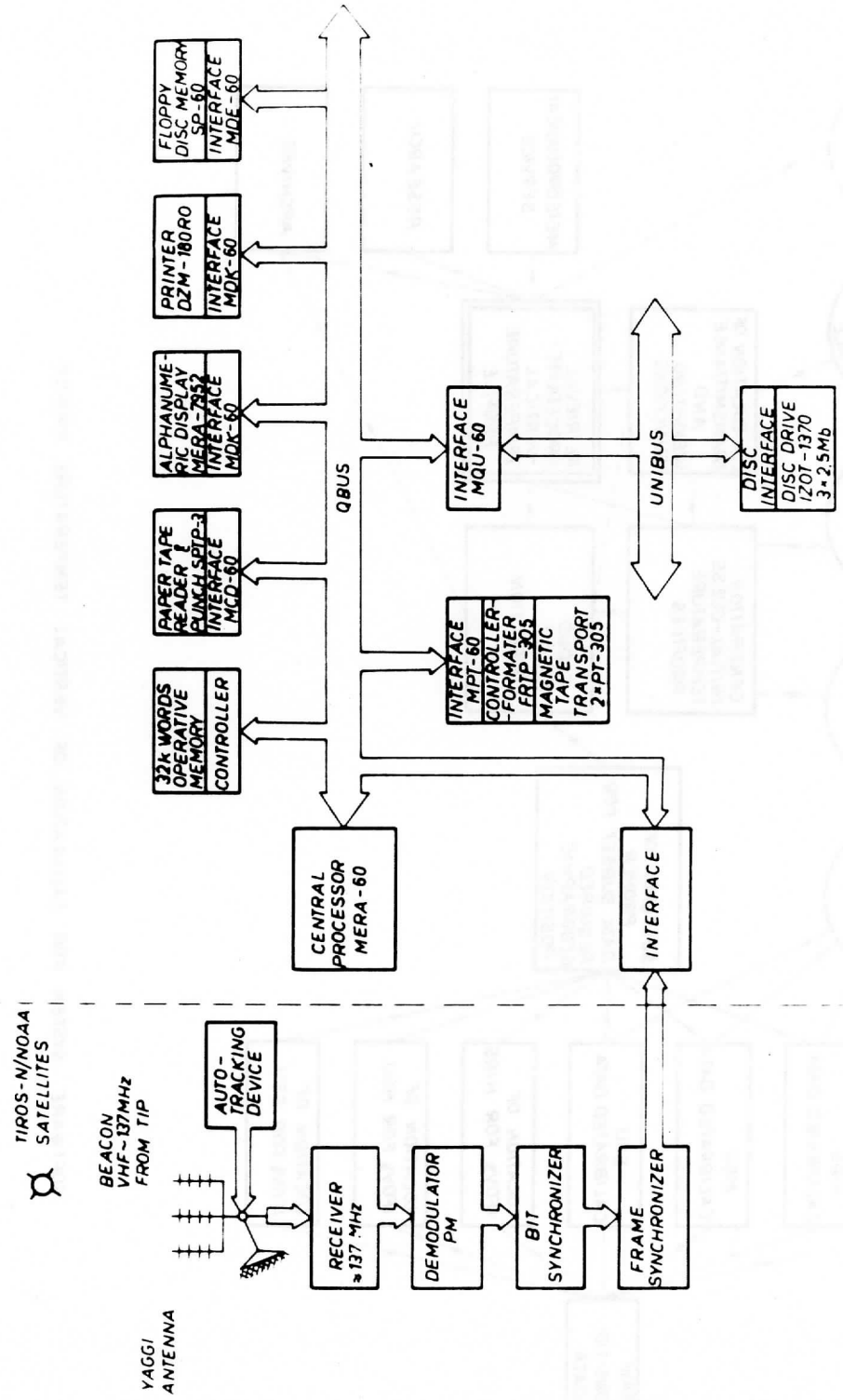
d. Retrieval of temperature profile from clear radiances.

In practice, only three methods for calculation of the temperature profiles are considered:

- iterated minimum information,
- nonlinear,
- general iterative.

Additionally, the statistical method will be used after obtaining statistical data of atmospheric temperature over Poland. In the method mentioned above, initial-guess temperature profiles and atmospheric transmittances are required. The regression method will be applied for calculation of initial-guess profiles. The regression coefficients suitable for generating initial-guess profiles are recorded on the "TOVS WG" magnetic tape obtained from the Cooperative Institute of Meteorological Satellite Studies (CIMSS). The FORTRAN programme for transmittance calculation recorded on this tape will also be applied. The most convenient method for calculation of temperature profiles will be selected taking into account what is possible on the MERA-60 computer system.

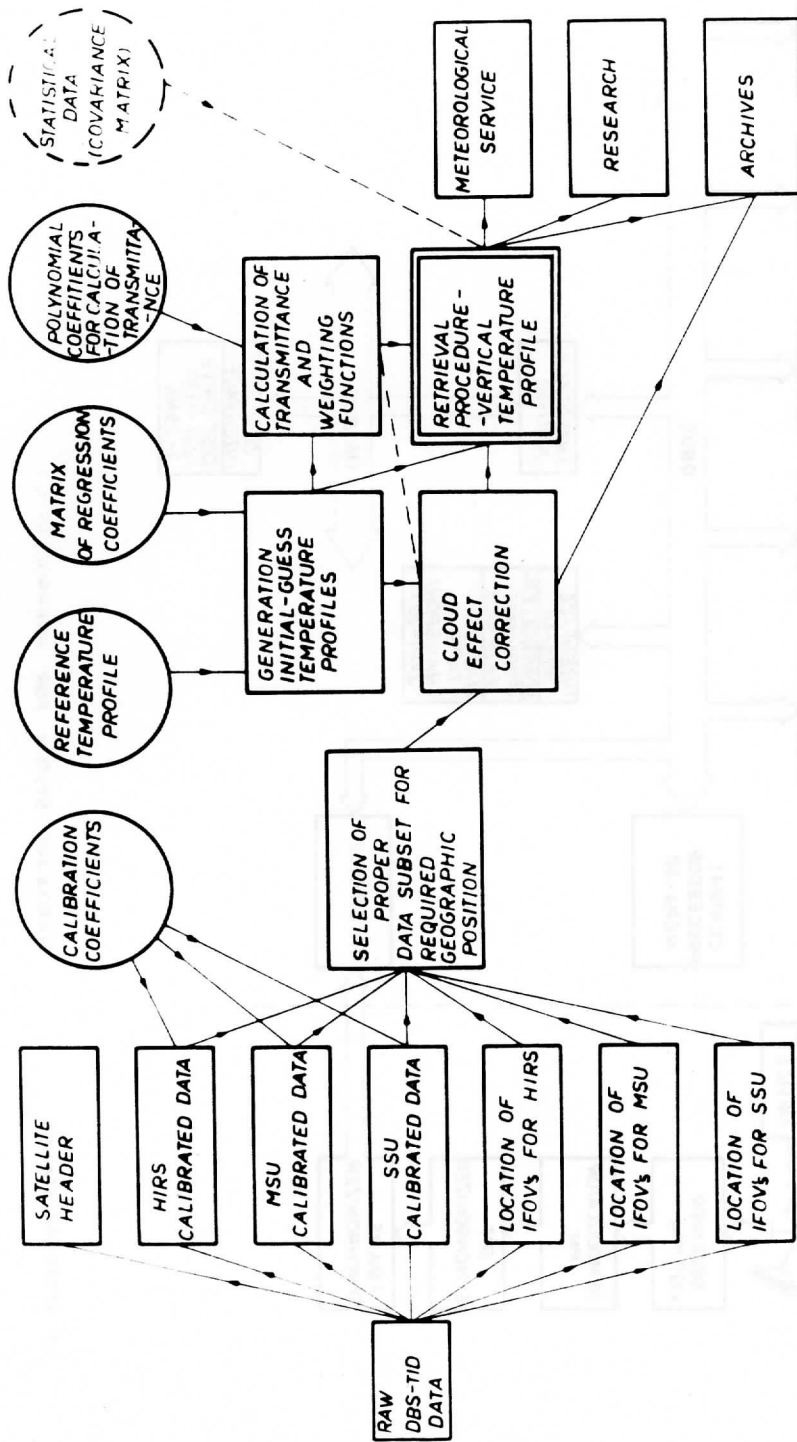
Acknowledgements: The author expresses his gratitude to the CIMSS for scientific information that is fundamental for his present and future work in the field of processing the TIP data.



HARDWARE SYSTEM FOR PREPROCESSING OF TIROS-N/NOAA DATA

FIGURE 1

TIP RECEIVING STATION



SOFTWARE SYSTEM FOR CALCULATION OF VERTICAL TEMPERATURE PROFILE

FIGURE 2

The Technical Proceedings of
The First International TOVS Study Conference

Igls, Austria

29 August through 2 September 1983

Edited by

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March 1984