

MHWWM. IMGW-PIB science magazine



**METEOROLOGY HYDROLOGY
AND WATER MANAGEMENT**

IMGW-PIB Science Journal since 2013



The **MHWM magazine** is a platform for the exchange of knowledge and experience. We invite scientists, academicians, experts, practitioners and business. We offer you the chance to comment on the most important problem of the modern world – civilization challenges in the face of a changing climate. We create a forum for many fields thanks to the interdisciplinary approach. We ask difficult questions. We are looking for solutions.

The Journal provides an interdisciplinary platform exploring and discussing the emerging needs, problems and expectations of the providers of meteorological, climatological and hydrological services via e.g. presentations of new theoretical insights, new developments and applications, as well as real-world case studies illustrating the practical implementations, from research and development into practice. The studies may concern all aspects of the related services and their production chains, including emerging observational techniques and development of modeling, processing and forecasting methods.

MHWM magazine was established in **2013**. We use an electronic submission system to work with authors and reviewers.

Since **2017**, the magazine is on the list of Web of Science journals in the Emerging Sources Citation Index collection.



MHWM profiles – Climatology and Meteorology



Climatological topics addressed include climatic variability and change - its descriptions, causes and implications for people, dynamical and statistical downscaling, seasonal forecasting, climate risk and vulnerability, development of climate monitoring tools. Examples of meteorological research include topics such as boundary layer processes, physical meteorology, air pollution meteorology and urban meteorology. The studies concern also mathematical and statistical techniques applied to climatological and meteorological data sets.

- Research on climate variability and change
- Impact of climate change on humans
- Dynamic and statistical downscaling
- Modeling and forecasting
- Extreme weather
- Atmosphere monitoring tools
- Meteorology of pollution
- Urban meteorology

Editor:

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MHWM profiles – Hydrology and Water Management

Thematic scope covers research and development in support of understanding hydrological systems and the provision of hydrological products and services for effective water management, including the capability to evaluate and predict the movement and availability of water within all components of the hydrological cycle and the ability to recognize and simulate the impacts on environmental and socio-economic systems.

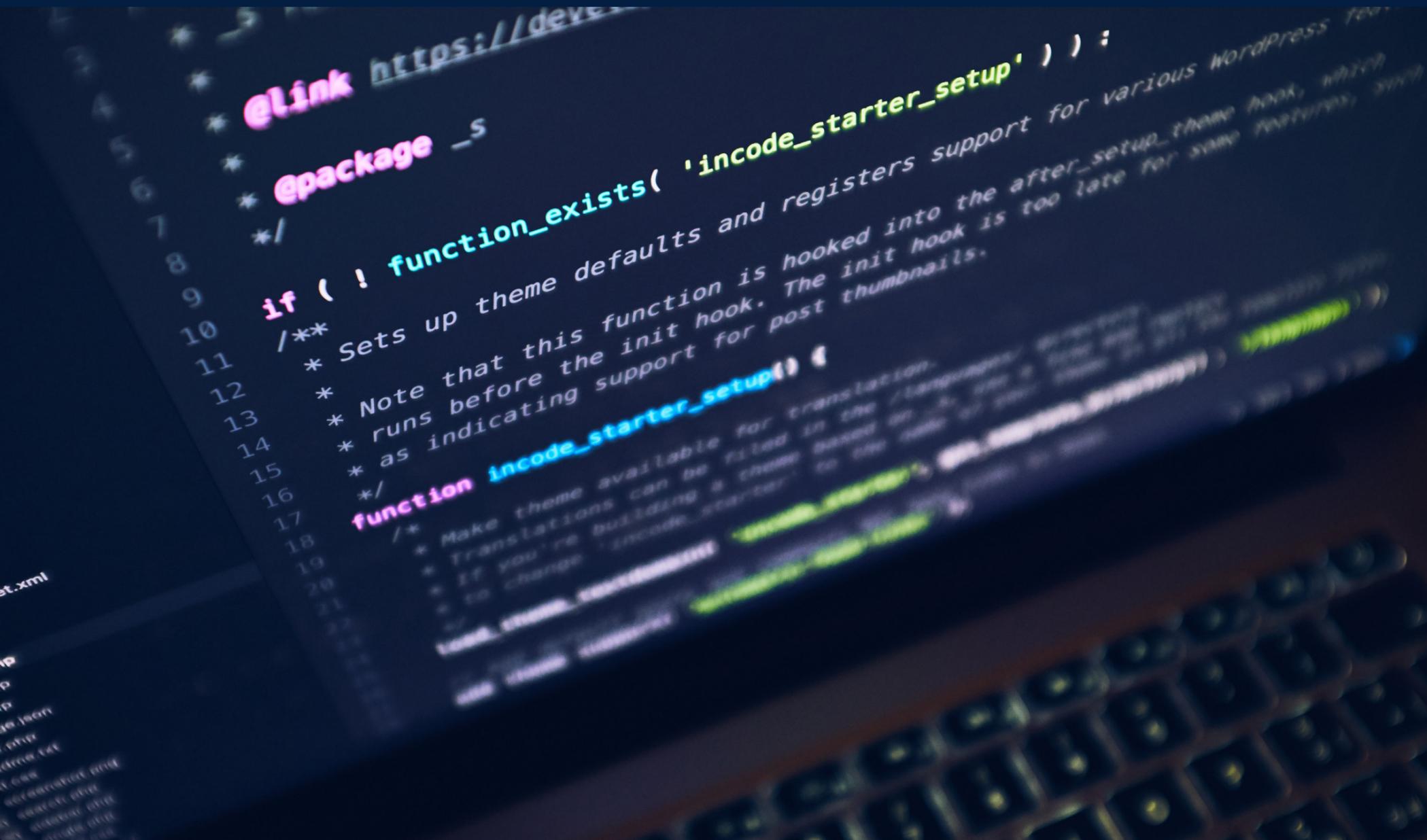
- Hydrological systems
- Catchment hydrology
- Water resources management
- Extreme events: floods and droughts
- Modeling and forecasting
- Flood risk management
- Water in cities
- Water resources in environmental and social terms

Editor:

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MHWM profiles – Technologies and Operational Systems



Technologies and Operational Systems concern all aspects of the development of meteorological and climatological services provided especially, but not exclusively, by the national meteorological and hydro-meteorological services. Of interest is the development of related products and of their production chains. It includes emerging observational techniques applying both in-situ and remote methods, development of modeling systems including numerical weather prediction, data assimilation and postprocessing methods. It concerns also development of other forecasting methods and techniques. Of interest are new types of user oriented products, especially responding to natural hazards and aimed at protection of life and properties, including e.g. impact-based-warnings and their methodologies.

- Development of meteorological and climatological services
- Modern observation techniques
- Modeling systems
- Numerical weather prediction
- Data assimilation
- Early warning systems
- Operating technologies

Editor:

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MHWM profiles – GNSS Meteorology and Remote Sensing

Global navigation satellite systems (GNSS) contribute to the development of atmospheric science by providing information on water vapour, which is crucial for meteorological and climate observation systems. The production, exploitation and evaluation of operational GNSS meteorology for weather forecasting is well established in Europe due to the more than 20 years of cooperation between scientific community and meteorological services. Homogeneously processed GNSS data have a great potential for monitoring of weather conditions, assimilation into numerical weather prediction (NWP) models, monitoring of climate trends and water vapour variability. GNSS reflectometry, in turn, contributes to environmental monitoring by estimating soil moisture, snow depth, ocean wind speed or sea ice concentration. The aim of the Section GNSS Meteorology and Remote Sensing is the publication of valuable articles on the subject of using ground and space-based data for estimating neutral atmosphere, multi-GNSS retrieval of tropospheric parameters (ZWD, ZTD, IWV/PWV, tropospheric gradients), tropospheric products (both real-time and postprocessed) for nowcasting and forecasting systems, assimilation of GNSS products



MHWM profiles – GNSS Meteorology and Remote Sensing

into NWP and utilization of NWP for improving GNSS data processing, inter-comparison of different tropospheric products, homogenization of GNSS tropospheric time series, using GNSS data for climate analysis, retrieving of soil moisture from GNSS observations, using GNSS reflectometry for the detection and characterization of sea ice, usage of satellite gravity observations for studying the atmospheric water cycle, and others.

- Use of Global Navigation Satellite Systems in atmosphere research
- GNSS meteorology in weather forecasting
- Terrestrial and satellite data in numerical models of weather forecasts
- Satellite observations in water cycle research
- Reflectometry and remote sensing in environmental monitoring

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MHWM profiles – Space Weather



Space weather depends on natural phenomena that can adversely affect critical functions and operations of different technical infrastructures in space and on Earth. Extreme space weather events can result in failures of key services such as electric power, communications, water supply, healthcare, and transportation. Space weather phenomena, such as geomagnetic disturbances or solar radiation storms, may disrupt or damage electronics in the satellites that are critical for communications, global navigation and aviation, security, remote sensing, and other applications.

The main field of interest for the space weather are time-varying conditions within the Solar System and their connection to the solar activity. The crucial element is the solar wind that affects the space surrounding the Earth. It exerts the greatest impact on the magnetosphere and ionosphere conditions, coupled also with the thermosphere and exosphere. In MHWM journal, we are particularly focused on the studies of: solar activity phenomena (solar flares, coronal mass ejections – CMEs, solar energetic particles – SEP); ionosphere disturbances observed by different ground-based sensors and satellite techniques

MHWM profiles – Space Weather



(including LEO satellites), and ionosphere disturbances related to the scintillation of long wave radio signals; geomagnetic storms and related phenomena (aurora); long wave radio astronomy. The journal's scope combines the research methods, the observations and data analysis, as well as modeling and testing of physical phenomena associated with space weather.

- Solar activity phenomena
- Observation of ionosphere interference by terrestrial and satellite techniques
- Interference caused by long-wave radio signals
- Geomagnetic storms
- Radio astronomy
- Weather phenomena in space and their impact on human life

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MHWM in numbers:

15 issues in which over **100** scientific and review articles were published

150 active reviewers, including **60** from abroad

Over **300** authors from around the world

Nearly **32** thousand views and **20** thousand downloads

Nearly **9.5** thousand downloads

Indexed in Polish and international citations databases, among others:

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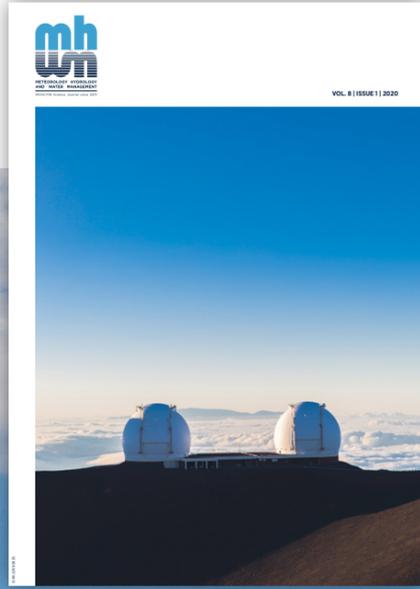
IMGW-PIB

We have been forecasting weather since **1919**,
conducting an analyzes and research works.
Our mission is to inform the public and organizations
about weather conditions – meteorological
and hydrological, climate change and all factors
affecting the current weather in Poland.

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MHWM. IMGW-PIB science magazine. **We look at the world with scientific eye.**



Cumulus humilis (cumuliform cloud of lower altitudes)
- cloud with a little vertical extent and a flattened shape, that is often referred to as “fair weather cumulus”.

Weather is the state of the atmosphere in its lowest layer - the troposphere.
It describes phenomena and parameters of air masses, such as: air pressure, temperature, humidity, wind speed and direction.

Specific humidity
- the ratio of the mass of steam to the mass of humid air.