

WORLD METEOROLOGICAL DAY
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UNDERSTANDING CLOUDS

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WEATHER CLIMATE WATER



WORLD
METEOROLOGICAL
ORGANIZATION

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INTRODUCING THE NEW ON-LINE EDITION OF THE *INTERNATIONAL CLOUD ATLAS*

Understanding clouds is the theme of World Meteorological Day 2017 to highlight the enormous importance of clouds for weather, climate and water. Clouds are central to weather observations and forecasts. Clouds are one of the key uncertainties in the study of climate change: we need to better understand how clouds affect the climate and how a changing climate will affect clouds. They play a critical role in the water cycle and in shaping the global distribution of water resources.

On the lighter side, World Meteorological Day 2017 will provide an opportunity to celebrate the inherent beauty and aesthetic appeal of clouds, which have inspired artists, poets, musicians, photographers and countless other enthusiasts throughout history.

World Meteorological Day marks the launch of a new edition of the *International Cloud Atlas* after the most thorough and far-reaching revision in its long and distinguished history. The new WMO *Atlas* is a treasure trove of hundreds of images of clouds, including a few newly classified cloud types. It also features other meteorological phenomena such as rainbows, halos, snow devils and hailstones. For the first time ever, the *Atlas* has been produced in a digital format and is accessible via both computers and mobile devices.

The *International Cloud Atlas* is the single authoritative and most comprehensive reference for identifying clouds. It is an essential training tool for professionals in the meteorological community and those working in aviation and shipping. Its reputation is legendary among cloud enthusiasts.

The *International Cloud Atlas* has its roots in the late nineteenth century. It was revised on several occasions in the twentieth century, most recently in 1987, as a hard-copy book, before the advent of the Internet.

Advances in science, technology and photography prompted WMO to undertake the ambitious and exhaustive task of revising and updating the *Atlas* with images contributed by meteorologists, cloud watchers and photographers from around the world.



Gary McArthur

*Newly added supplementary feature Asperitas,
Burnite, Tasmania, Australia*

Luka Filipi



Claudia Hinz



Mirosław Cichanowicz

Clockwise from top:
Cirrocumulus stratiformis homomutatus, Jois, Austria,
Newly illustrated photometeor halo, Mt. Keilberg, Germany,
New species, *Volutus* (roll cloud), Szprotawa, Poland

CLASSIFYING CLOUDS

The present international system of Latin-based cloud classification dates back to 1803, when amateur meteorologist Luke Howard wrote the *Essay on the Modification of Clouds*.

The *International Cloud Atlas* currently recognizes 10 basic cloud genera, which are defined according to where in the sky they form and their approximate appearance.

High-level clouds typically have a base above about 5 000 metres (16 500 feet); middle-level clouds have a base that is usually between 2 000 and 7 000 m (6 500 to 23 000 feet); and low-level clouds usually have their base at a maximum of 2 000 m (6 500 feet).

Most cloud names contain Latin prefixes and suffixes which, when combined, give an indication of the cloud's character. These include:

- Stratus/strato: flat, layered and smooth
- Cumulus/cumulo: heaped up, puffy
- Cirrus/cirro: feathery, wispy
- Nimbus/nimbo: rain-bearing
- Alto: mid-level (though *alto* is Latin for high)

The 10 genera are subdivided into species, which describe shape and internal structure, and varieties, which describe the transparency and arrangement of the clouds. In total, there are about 100 combinations.

The *International Cloud Atlas* includes a new species, *Volutus* (a Latin word meaning rolled), for roll cloud.

It also proposes some new "special" clouds such as *Homogenitus* (from the Latin *homo* meaning man and *genitus* meaning generated or made). One example of this type of cloud is Contrails (short for condensation trails) sometimes produced by aircraft engine exhaust.



Jan Knight

Newly added special cloud term flammagenitus (Cumulus flammagenitus), Serra de Alvorge, Portugal

A special mention is made of *Asperitas* (a Latin word meaning roughness, unevenness) – a dramatic formation that looks like an upturned roughened sea surface – which has captured the public imagination in recent years. This cloud is included in the *Atlas* as a supplementary feature.

The new *International Cloud Atlas* is a tribute to the generosity of the Hong Kong Observatory and the dedication and enthusiasm of a special WMO task team, which spent nearly three years revising the text and collecting and classifying images and data. It increases and enriches our understanding of clouds and will serve as an invaluable resource for many years to come.

For more information, please contact:

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