

VO-TCS Report on Quality and Assurance

V1.0

For the Aviation Color Code service

Quality assurance (data content)

The International Civil Aviation Organization (ICAO) recommends the State Volcano Observatory of the world to operator a color coded system designed to inform the civil aviation community about the status of a volcano and the expected associated threats. This system is described in several official documents, including: the Annex 3 - Meteorological Service for International Air Navigation, the international Aviation Volcano Watch (IAVW) Handbook as well as the Guidance for VOs. More specifically the aviation color code is cited to be “a key component of the global standardization of information provided by volcanological agencies to aviation users.” (IAVW Handbook, 2004).

The system relies on four main levels, from green to red, where the definition for each level is provided as follows and corresponds to an activity level at the volcano:

ICAO Colour Code	Status of activity of volcano
GREEN	Volcano is in normal, non-eruptive state. <i>or, after a change from a higher level: Volcanic activity considered to have ceased, and volcano reverted to its normal, non-eruptive state.</i>
YELLOW	Volcano is experiencing signs of elevated unrest above known background levels. <i>or, after a change from higher alert level : Volcanic activity has decreased significantly but continues to be closely monitored for possible renewed increase.</i>
ORANGE	Volcano is exhibiting heightened unrest with increased likelihood of eruption. <i>or, Volcanic eruption is underway with no or minor ash emission. [specify ash-plume height if possible].</i>
RED	Eruption is forecasted to be imminent with significant emission of ash into the atmosphere likely. <i>or, Eruption is underway with significant emission of ash into the atmosphere. [specify ash-plume height if possible].</i>

Such system is intended to be used both for escalating activity as well as in the phase of decreasing activity at the volcano.

Quality check:

Operating the Aviation Color Code is responsibility of the Volcano Observatory which monitor volcanoes and their activity. The decision of moving across the four levels is often based on a variety of data including,

real time data (both geophysical, geochemical and meteorological), historical monitoring data for defining background conditions, and expertise of specialists called to make the decision. However, the usage of ACC strongly depends on Volcano Observatory. For example, it depends on the amount and quality of monitoring data available, but also it depends on how frequently a volcano erupts and how well it is monitored. Despite ICAO defines the ACC levels linking them to volcano activity levels, there are currently no standards on how, when and why to change the aviation color code.

At IMO the Aviation Color Code is decided amongst a group of specialists that are called in when needed. The decision is taken in a democratic way and whenever a full consensus is not reached, the majority of the group decides. Changing the aviation color code is part of the contingency plans for the natural hazard specialists (NVS) which monitor Icelandic volcanoes 24/7. When time does not allow, NVS is responsible for changing the ACC.

ACC for Icelandic volcanoes are available on IMO's website at the page: <https://en.vedur.is/earthquakes-and-volcanism/volcanoes/> as well as at the Catalogue of Icelandic Volcanoes page: <https://icelandicvolcanoes.is/>