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**Space systems — Calibration  
requirements for satellite-based  
passive microwave sensors**

*Systèmes spatiaux — Exigences d'étalonnage des capteurs passifs  
d'hyperfréquences satellitaires*

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## Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

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## Introduction

Water is one of the key elements for survival of all creatures on earth. Water brings us the blessings of food thanks to agriculture, but water is also responsible for providing forest products and fish, which are essential for our lives. However, too much or too little water can lead to environmental disasters such as hurricanes, heavy rains, floods, droughts and wild fires.

Many satellite sensors are launched through international cooperation ventures with the aim of monitoring the behaviour of the water cycle and estimating some of the parameters related to it, e.g. soil moisture, vegetation biomass, snow cover, sea ice, and so on. A systematic and timely monitoring of land surface parameters that affect the hydrological cycle at local and global scales are of primary importance in obtaining a better understanding of geophysical processes and in order to manage environmental resources and mitigate for natural disasters.

At present, some applications to assist our human activities are provided, such as weather forecasts and predictions of climate change. Nowadays, the observation data acquired by passive microwave sensors are used for weather forecasts, fishery services, drought monitoring on a daily basis, and for predicting climate change in the future. However, errors due to bias, gain, and sensitivity among passive microwave sensors can degrade accuracy of applications and users could waste effort and time for compensation by on-orbit operation.

This document standardizes calibration methods (requirements and verification methods) to minimize errors of observation data among passive microwave sensors. It is expected that this document can improve the accuracy of weather forecasts, sea surface temperatures for fishery services, soil moisture monitoring to decrease water waste for farmers, snow cover and depth for water storage. Moreover, these observations can provide useful information for climate change prediction that is relevant to our daily lives.

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