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Geographic information — Imagery sensor models for geopositioning —

Part 2: SAR, InSAR, lidar and sonar

*Information géographique — Modèles de capteurs d'images de
géopositionnement —*

Partie 2: SAR, InSAR, lidar et sonar



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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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The committee responsible for this document is ISO/TC ISO/TC 211, *Geographic information/Geomatics*.

ISO/TS 19130 consists of the following parts, under the general title *Geographic information — Imagery sensor models for geopositioning*:

- *Geographic information — Imagery sensor models for geopositioning*
- *Part 2: Geographic information — Imagery sensor models for geopositioning — Part 2: SAR, InSAR, lidar and sonar*

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Introduction

The purpose of this Technical Specification is to specify the geolocation information that an imagery data provider shall supply in order for the user to be able to find the earth location of the data using a detailed physical sensor model for Synthetic Aperture Radar (SAR), Light Detection And Ranging (lidar) and Sound Navigation And Ranging (sonar). The intent is to standardize sensor descriptions and specify the minimum geolocation metadata requirements for data providers and geopositioning imagery systems. Observations in this document are the generic meaning of the word; observations are not in the meaning of ISO 19156 observations.

Vast amounts of data from imaging systems have been collected, processed and distributed by government mapping and remote sensing agencies and by commercial data vendors. In order for this data to be useful in extraction of geographic information, further processing of the data are needed. Geopositioning, which determines the ground coordinates of an object from image coordinates, is a fundamental processing step. Because of the diversity of sensor types and the lack of a common sensor model standard, data from different producers may contain different parametric information, lack parameters required to describe the sensor that produces the data, or lack ancillary information necessary for geopositioning and analysing the data. Often, a separate software package must be developed to deal with data from each individual sensor or data producer. Standard sensor models and geolocation metadata allow agencies or vendors to develop generalized software products that are applicable to data from multiple data producers or from multiple sensors. With such standards, different producers can describe the geolocation information of their data in the same way, thus promoting interoperability of data between application systems and facilitating data exchange.

Part 1 provided a location model and metadata relevant to all sensors. It also included metadata specific to whiskbroom, pushbroom, and frame sensors, and some metadata for Synthetic Aperture Radar (SAR) sensors. In addition, it provided metadata for functional fit geopositioning, whether the function was part of a correspondence model or a true replacement model. It also provided a schema for these metadata elements. Comments on Part 1 stated that metadata needed to be specified for additional sensors. The technology of such sensors has now become sufficiently mature that standardization is now possible. This Technical Specification extends the specification of the set of metadata elements required for geolocation by providing physical sensor models for Light Detection And Ranging (lidar) and Sound Navigation And Ranging (sonar), and it presents a more detailed set of elements for SAR. This Technical Specification also defines the metadata needed for the aerial triangulation of airborne and spaceborne images. This Technical Specification also provides a schema for all of these metadata elements.