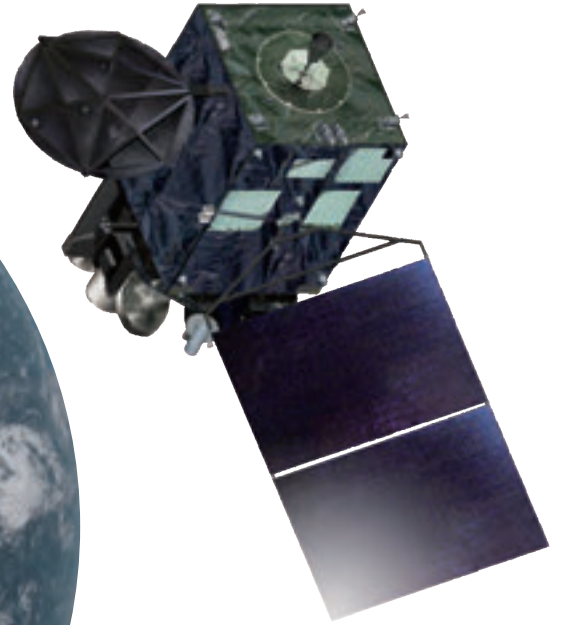
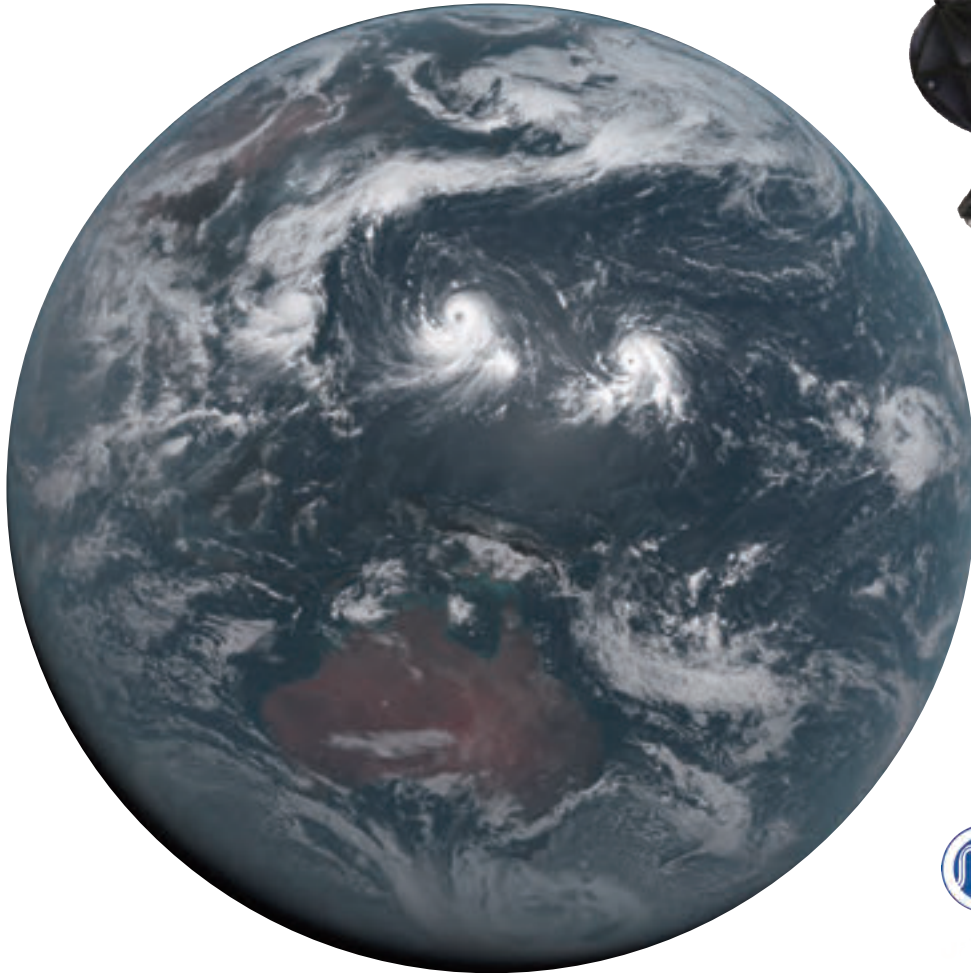
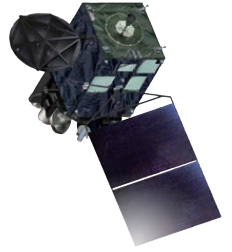


静止気象衛星 —ひまわり8号・9号—



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The first operational image from Himawari-8 (02 UTC, 7 July 2015; true-color composite) (left) and images of Himawari-8/9 (upper right)

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The Himawari-8/9 Geostationary Meteorological Satellites

Both of JMA's Himawari-8/9 geostationary meteorological satellites (the successors to the MTSAT series) are equipped with highly improved Advanced Himawari Imagers (AHIs). JMA aims to establish a stable and continuous satellite observation system with redundancy based on twin satellite operation involving Himawari-8 and -9, which is expected to contribute to disaster risk reduction in Asia and the western Pacific until 2029.

観測機能の概要

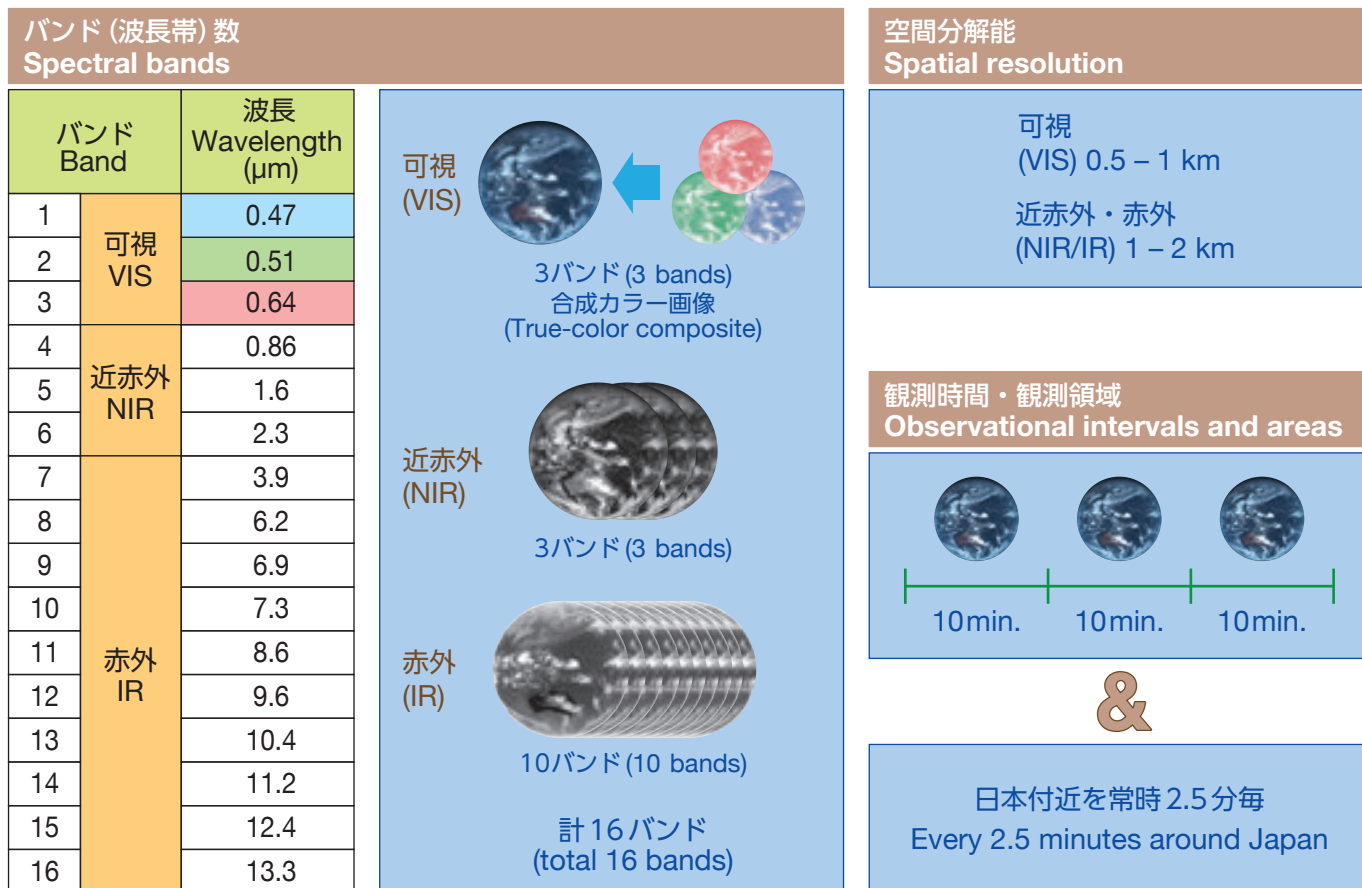
地球の雲の状態を観測するためにひまわり8号・9号に搭載されている可視赤外放射計は、可視域3バンド、近赤外域3バンド、赤外域10バンドの計16バンドのセンサーを持っています。

また、ひまわり8号・9号では、静止衛星から見える範囲の地球全体の観測を10分毎に行いながら、特定の領域を高頻度に観測することができます(例：日本域を2.5分毎)。さらに、空間分解能は可視で0.5km～1km、近赤外と赤外で1km～2kmとなっています。

Observation by Himawari-8/9

Himawari-8/9's AHIs have 16 observation bands (3 for visible, 3 for near-infrared and 10 for infrared). The observation bands of the satellites will facilitate understanding of cloud conditions.

Additionally, the time interval of full-disk observations is 10 minutes for Himawari-8/9. Along with such observation, Himawari-8/9 also observe certain areas so frequently that the whole of Japan is covered in with 2.5 minutes intervals. The spatial resolutions of Himawari-8/9 are 0.5 – 1 km for visible bands and 1 – 2 km for near-infrared and infrared bands.



データ利用の高度化

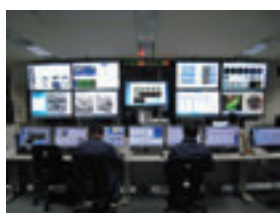
これらの観測機能により、台風や集中豪雨をもたらす雲等の移動・発達を詳細に把握でき、また火山灰やエアロゾルの分布も高精度に把握できます。

ひまわり8号・9号で得られた観測データは、雲画像として利用されるほか、コンピュータ処理により上空の風向風速や温度など多くの物理量が計算され、数値予報など様々な用途に活用されます。

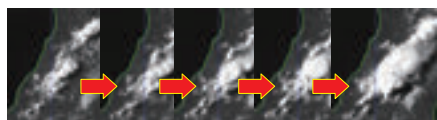
Improvement of data utilization

The enhanced observation functions of the satellites are expected to support unprecedented levels of precision in monitoring for the movement of tropical cyclones and clouds bringing heavy local rain. It is also possible to observe the distribution of volcanic ash and aerosols with high accuracy.

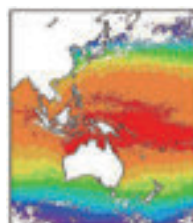
Data derived from Himawari-8/9 is used for cloud imagery, and utilized in numerical weather prediction and related fields based on calculation to estimate values such as temperature and wind direction/speed in the upper atmosphere.



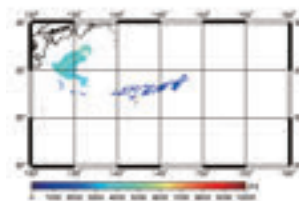
データ処理(気象衛星センター)
Data processing
(Meteorological Satellite Center)



発達する雲の早期検出
Detection of rapidly
developing clouds



詳細な海面水温
Detailed sea surface
temperature data



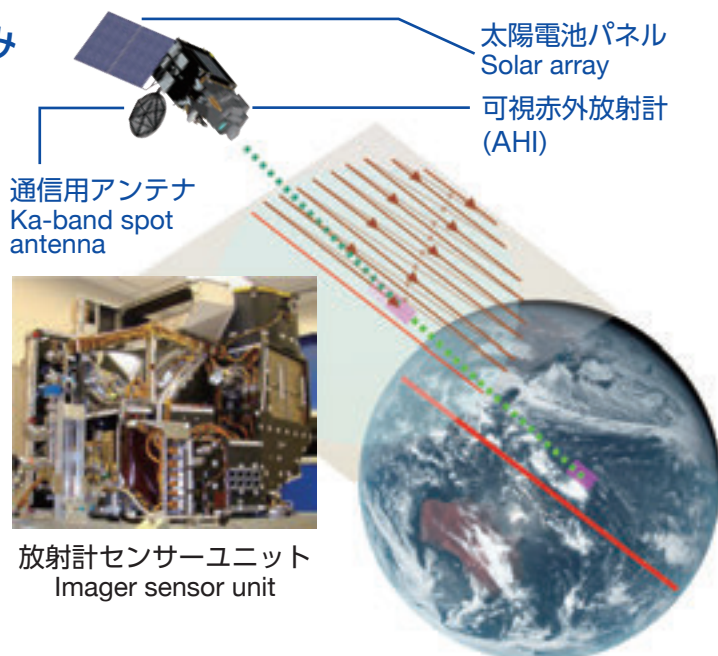
火山灰の検出
Detection of volcanic ash

可視赤外放射計 (AHI) による観測の仕組み

可視赤外放射計による観測は、内部の走査鏡を動かして地球を北から順に東西に走査することによって観測を行います。その途中で日本域など特定の領域に走査鏡の向きを変えて走査し、一連の全ての走査を10分間で行います。走査鏡で集められた光は、波長帯に応じて分光され、検出器で電気信号に変換されて地上に送られてきます。

How the Imager (AHI) works

The imager scans the earth by moving internal scanning mirrors in the east-west direction starting from the north. During the 10 minutes it takes to scan the full disk, the unit also scans a limited target region such as the area around Japan by changing the direction of the mirrors. Light gathered by the mirrors is dispersed into 16 wavebands before being converted into electrical signals by detectors for each band, and the signals are in turn transmitted to ground stations.



© Himawari Operation Enterprise Corporation
ひまわり8号・9号用アンテナ
The antennas for Himawari-8/9

ひまわり8号・9号の運用

ひまわり8号・9号の運用は民間のPFI事業者が担当し、アンテナなどの必要な施設の整備、観測データの受信や衛星管制を行います。

Operation of Himawari-8/9

Himawari-8/9 and their ground stations are operated by a company established under JMA's Private Finance Initiative (PFI) project. The company receives data from Himawari-8/9 and controls the satellites using antennas and other equipment.

ひまわり8号・9号の主要諸元 Major Characteristics of Himawari-8/9

位置 Position	東経 140.7 度の赤道上高度約 35,800 km の静止軌道上 Approx. 35,800 km high above the equator at 140.7° E	
姿勢制御方式 Attitude control	三軸姿勢制御方式 (進行方向 (ロール軸)、地軸方向 (ピッチ軸)、地心方向 (ヨー軸) それぞれをスラスター、リアクションホイールで制御する方式) Three-axis stabilization (A system to control roll, pitch and yaw using thrusters and reaction wheels)	
設計寿命 Design lifetime	衛星本体 (バス) 15 年以上、ミッション 8 年以上 (運用 7 年 + 並行観測 1 年) Meteorological mission: 8+ years; satellites: 15+ years	
軌道上展開後の大きさ Size while in operation	全長約 8 m Total length: approx. 8 m	
質量 Mass	ドライ 約 1,300 kg 打ち上げ時 約 3,500 kg	Dry mass: approx. 1,300 kg At launch: approx. 3,500 kg
周波数 Frequency	Ku バンド (受信: 13.75 - 14.5 GHz、送信: 12.2 - 12.75 GHz) Ka バンド (送信: 18.1 - 18.4 GHz) UHF (受信: 402.0 - 402.4 MHz) Ku-band (reception: 13.75 - 14.5 GHz; transmission: 12.2 - 12.75 GHz) Ka-band (transmission: 18.1 - 18.4 GHz) UHF (reception: 402.0 - 402.4 MHz)	



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