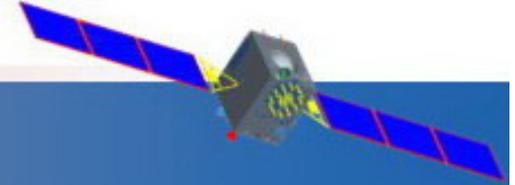


COMPASS and Its Applications in Life Relief

**China National Administration of GNSS
and Applications (CNAGA)**

2009, Baku

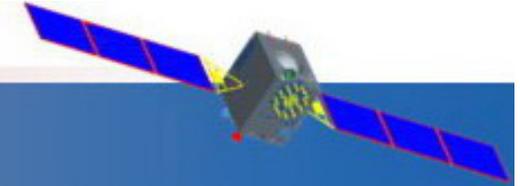


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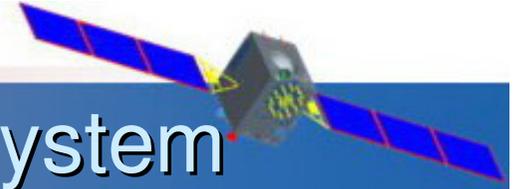


- 1. Introduction of COMPASS System**
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1

Introduction of COMPASS System



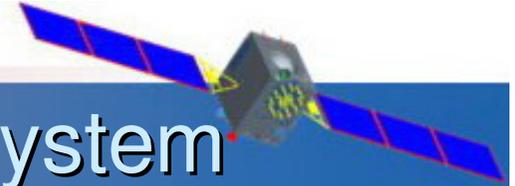
- ◆ In Dec 2003, COMPASS navigation demonstration system was in operation.
- ◆ In 2006 China began to build its global navigation system that is COMPASS Satellite Navigation System.



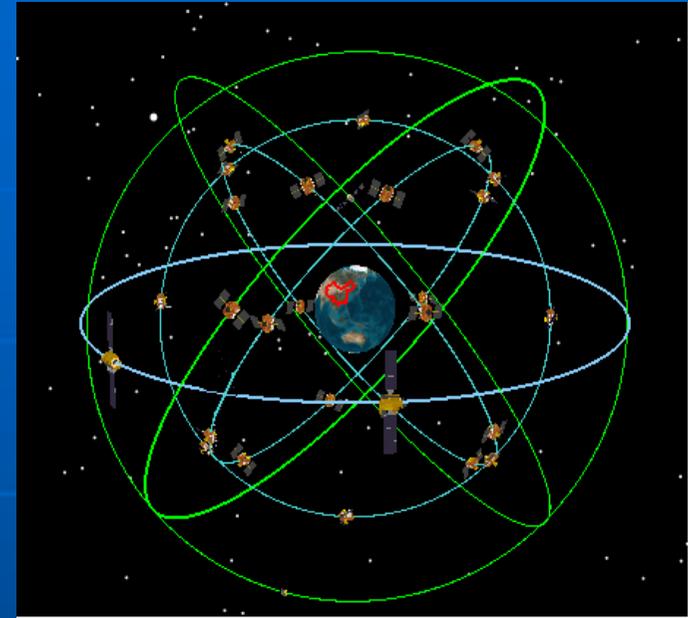


1

Introduction of COMPASS System

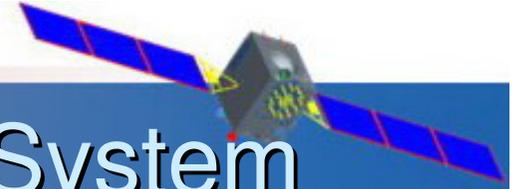


- Constellation
- COMPASS Signals Plan
- Navigation Services
- System Deployment
- Compatibility and Interoperability

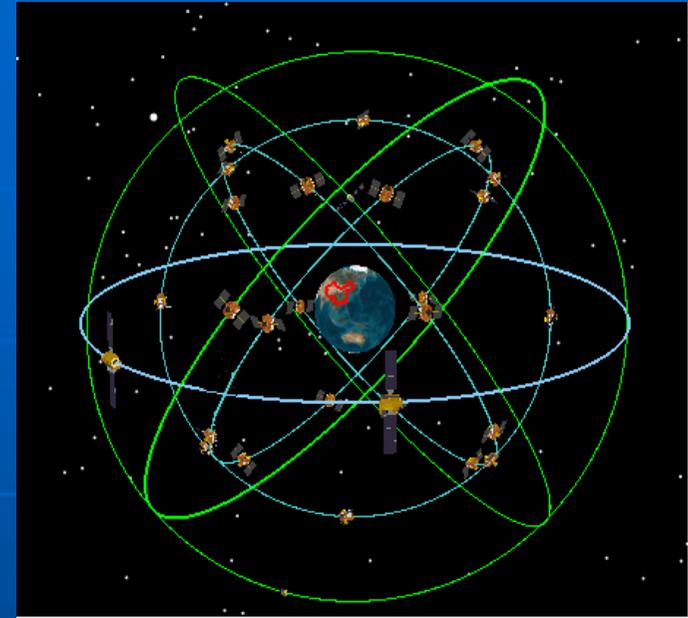




1 Introduction of COMPASS System

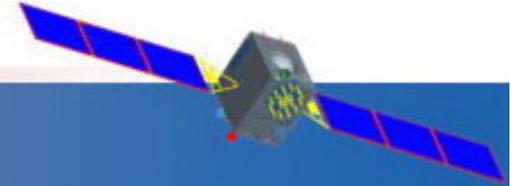


- **Constellation**
- COMPASS Signals Plan
- Navigation Services
- System Deployment
- Compatibility and Interoperability

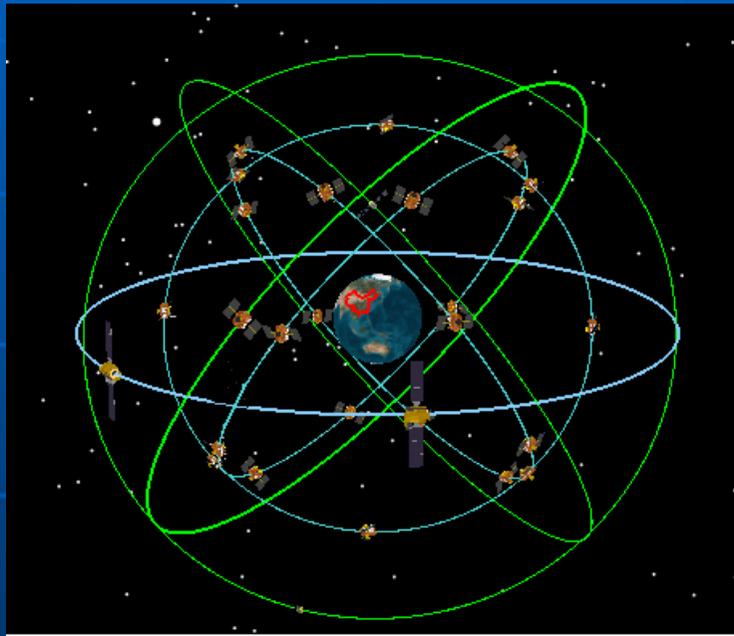




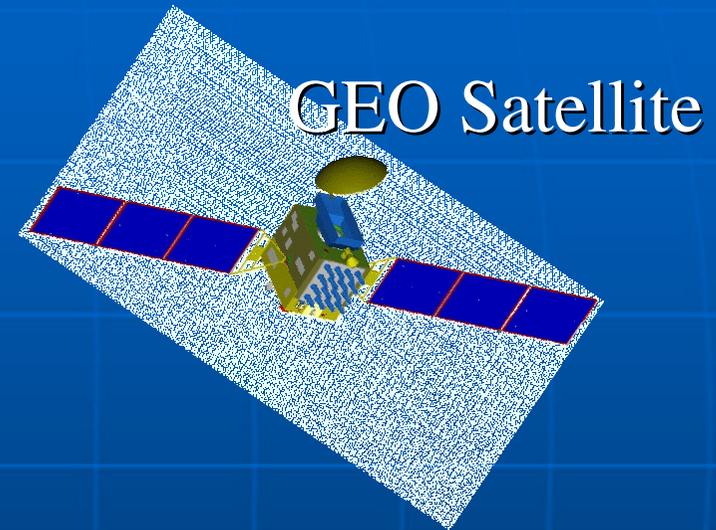
Space Segment



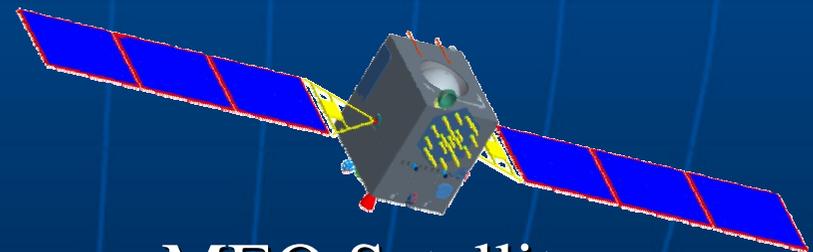
- ◆ 5 GEO satellites and 30 NGSO satellites



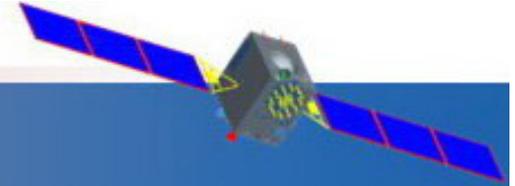
Constellation



GEO Satellite



MEO Satellite



• Constellation

- ◆ 5 GEO satellites at:
58.75E, 80E, 110.5E, 140E and 160E
- ◆ 30 NGSO satellites

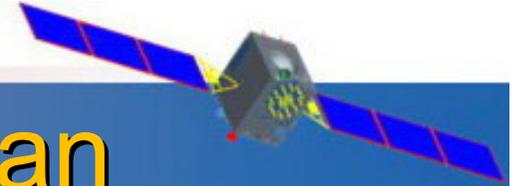
Number of satellites	27 MEO	3 IGSO
number of orbital planes	3	3
inclination angle (deg)	55	55
satellite altitude (km)	21500	36000



1 Introduction of COMPASS System



- Constellation
- **COMPASS Signals Plan**
- Navigation Services
- System Deployment
- Compatibility and Interoperability

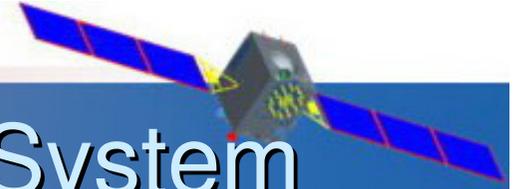


• COMPASS Signals Plan

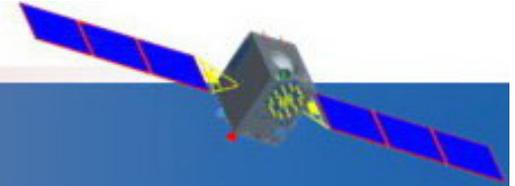
Signals	Carrier Frequency (MHz)	PRN code chip rate (M cps)	Modulation	Navigation data bit rate / symbol rate (bps/sps)	Service Type
B1 _D	1575.42	2.046	BOCs(14,2)	50/100	AS
B1 _P				No	
B1-C _D	1575.42	1.023	MBOC(6,1,1/11)	50/100	OS
B1-C _P				No	
B2 _D	1191.795	10.23	AltBOC(15,10)	50/100	OS
B2 _P				No	
B3	1268.52	10.23	QPSK-R(10)	500bps	AS
B3-A _D	1268.52	2.5575	BOCs(15,2.5)	50/100	AS
B3-A _P				No	



1 Introduction of COMPASS System



- Constellation
- COMPASS Signals Plan
- **Navigation Services**
- System Deployment
- Compatibility and Interoperability



• Navigation Services

◆ Two kinds of global services

- Open Service: free and open to users
 - Positioning Accuracy: 10 m
 - Timing Accuracy: 20 ns
 - Velocity Accuracy: 0.2 m/s
- Authorized Service: would be more accurate and provides positioning, velocity, timing and communication, and system integrity information.



1

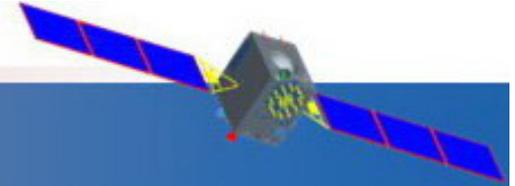
Introduction of COMPASS System



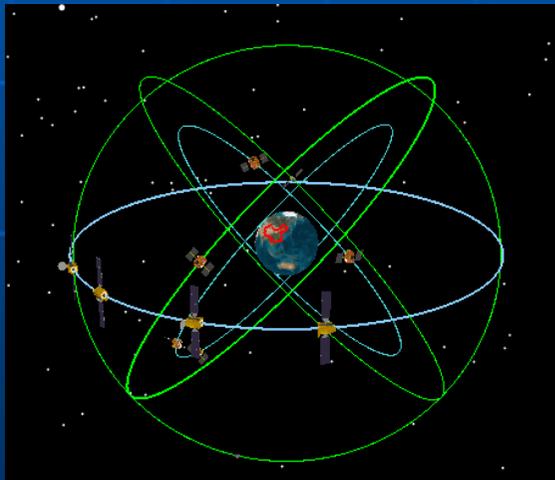
- Constellation
- COMPASS Signals Plan
- Navigation Services
- **System Deployment**
- Compatibility and Interoperability



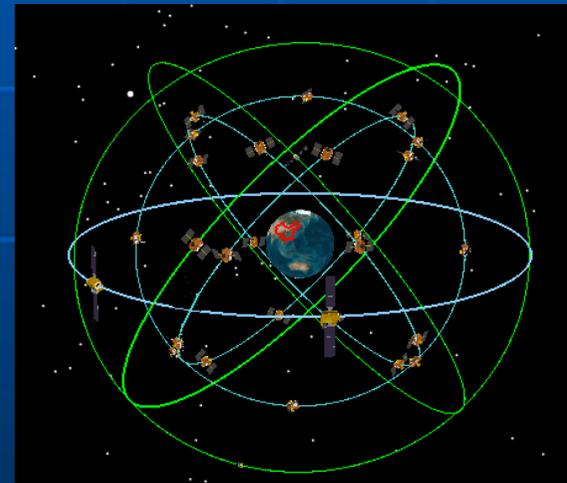
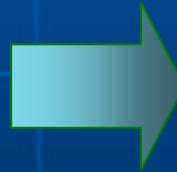
• System Deployment



- ◆ As a global system COMPASS will cover Asia-Pacific area firstly about 2010.
- ◆ In the second step a global satellite navigation system will be achieved.



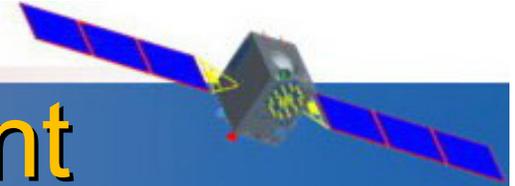
2010



The near future



• System Deployment

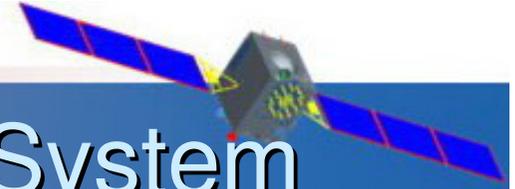


- ◆ At midnight on April 15, 2009 the second system satellite (COMPASS-G2) was launched , which is a GEO.

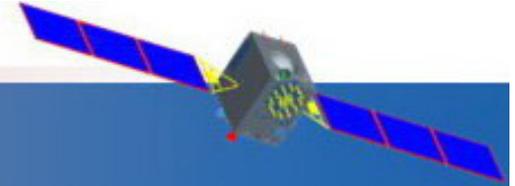




1 Introduction of COMPASS System



- Constellation
- COMPASS Signals Plan
- Navigation Services
- System Deployment
- **Compatibility and Interoperability**

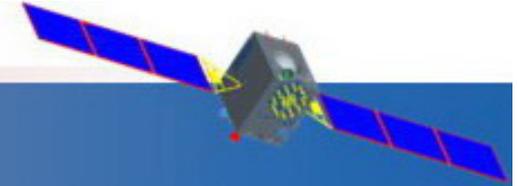


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2. Application In Life Relief



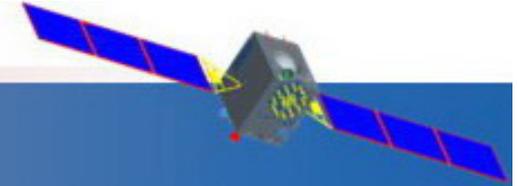
COMPASS system was widely used, such as :

- ◆weather forecasting
- ◆Transportation
- ◆precision agriculture
- ◆coal production
- ◆disaster relief
- ◆public safety





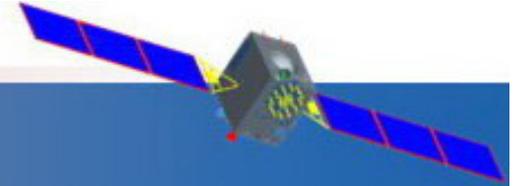
2. Application In Life Relief



- Disaster Relief
- Dangerous Chemical Transportation
- Hydrology and River Forecasting
- Marine save of life



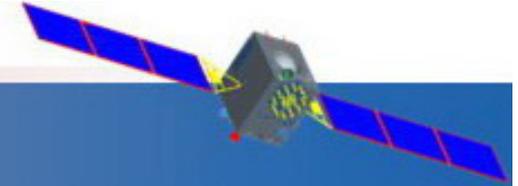
2. Application In Life Relief



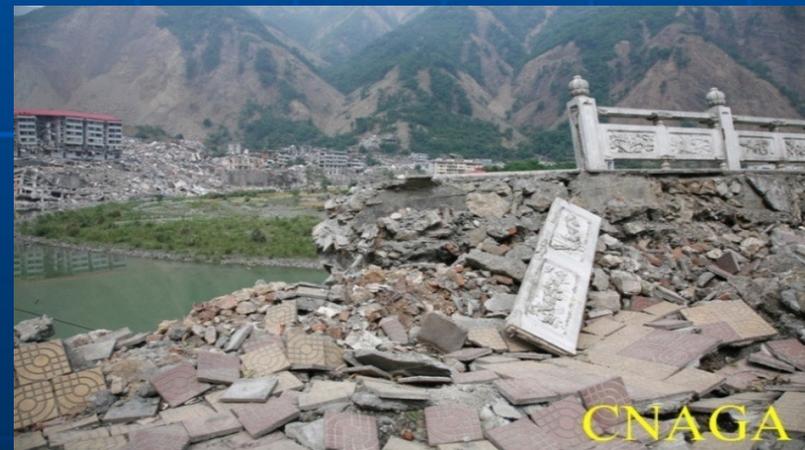
- Disaster Relief
- Dangerous Chemical Transportation
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Disaster Relief

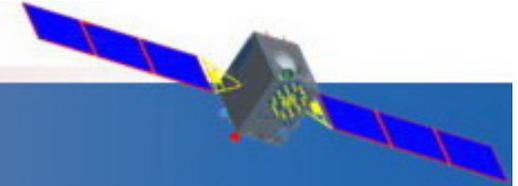


- ◆ The May 12 Sichuan earthquake is a kind of rare catastrophe.





Disaster Relief

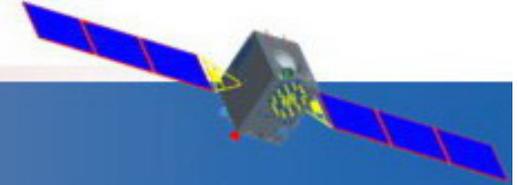


- ◆ using COMPASS equipment to send a large number of text message for help
- ◆ played a key role in poling-making search and rescue and healthcare.





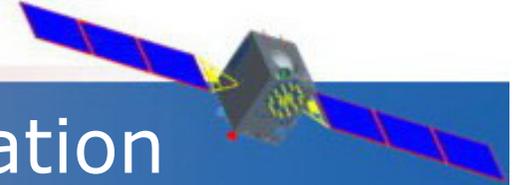
2. Application In Life Relief



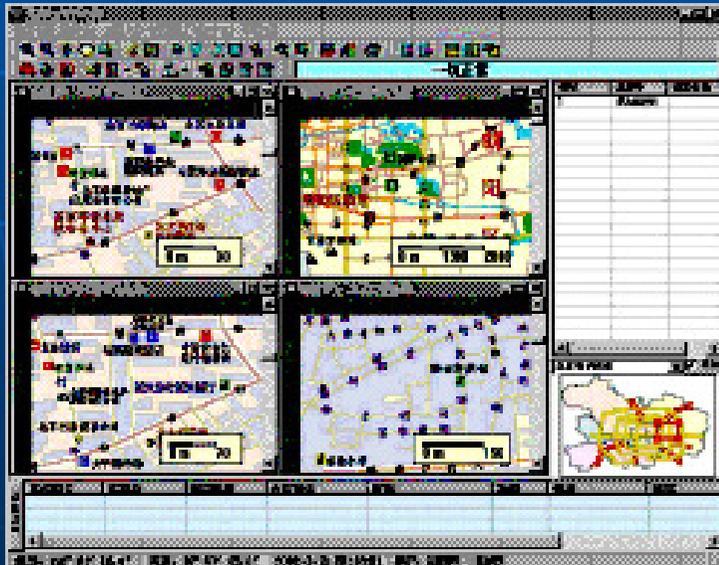
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■ Dangerous Chemical Transportation

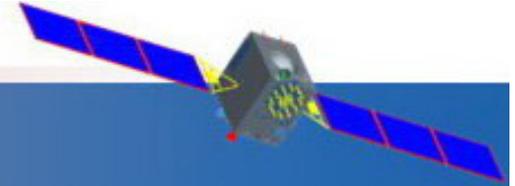


- ◆ early-warning function
- ◆ full control
- ◆ satellite communications
- ◆ surveillance data
- ◆ coverage of china and neighboring countries





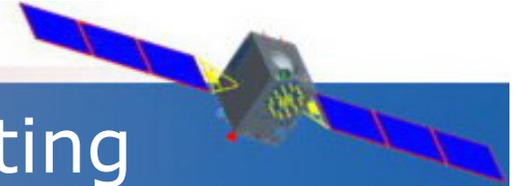
2. Application In Life Relief



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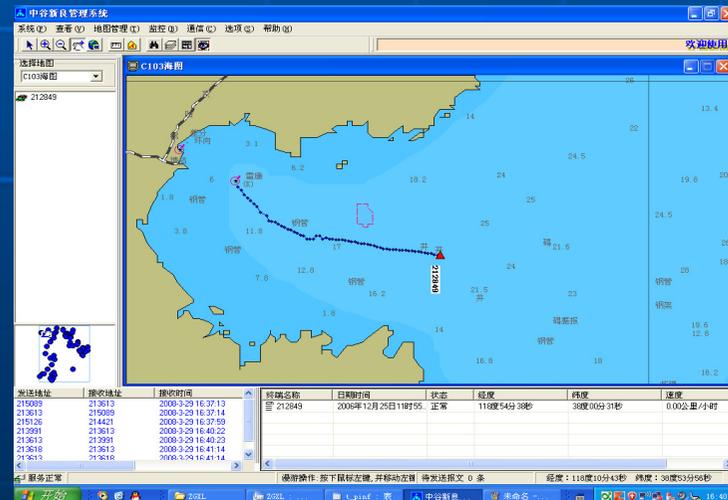
Hydrology and River Forecasting



COMPASS Hydrological Telemetry System

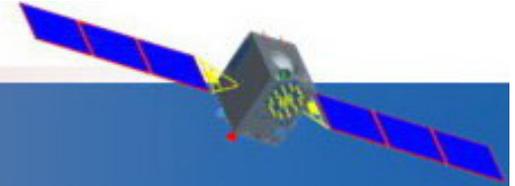


the Flood Reporting Web





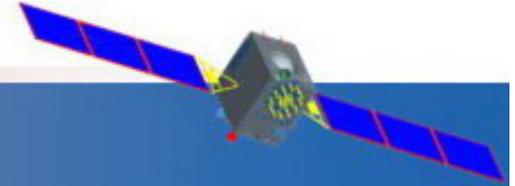
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■ Marine save of life

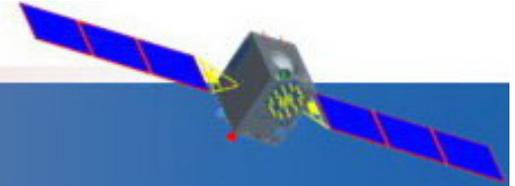


China is a country of marine fisheries, coastline 18,000 kilometers, an area of marine fisheries waters more than 300 square kilometer.

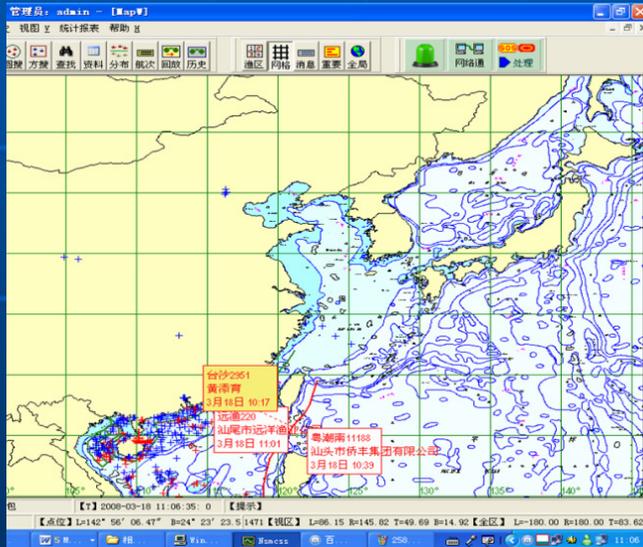




■ Marine save of life

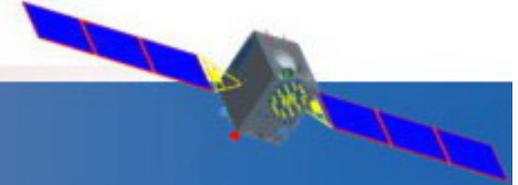


Offshore Fishing Vessel Security Protection and Integrated Information Service Application System

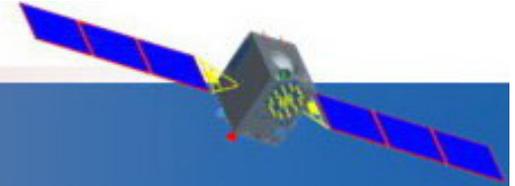




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**Thanks
for your attention!**