



Reference Sites Ground-based Automatic Measurement Systems for CALVAL

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Outline

- Introduction of the automatic observations during CRCS2014 field experimentations
 - Automatic observation systems in CRCS Dunhuang Site
 - Upgrading of the buoy in CRCS Lake Qinghai
- Upgrading and updating of the field surface and atmospheric parameters observing system
- Discussions and future work



Surface reflectance/radiance



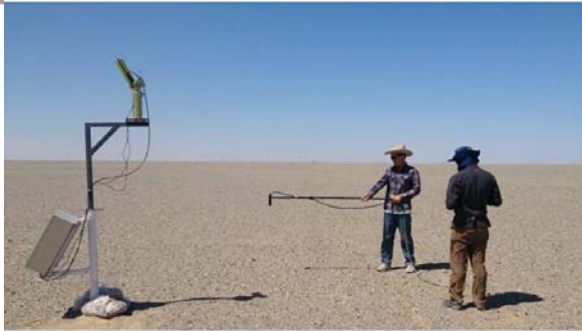
Atmosphere parameters

Sensor output DC **Satellite parameters**

RTC code

At-sensor radiance L

Calibration coefficient
 $A = DC / L$



Automatic observing instruments used in Dunhuang Site CRCS 2014



Atmosphere-Land reflectance spectral radiometer



Automated Test site Radiometer



CE318 SeaPRISM

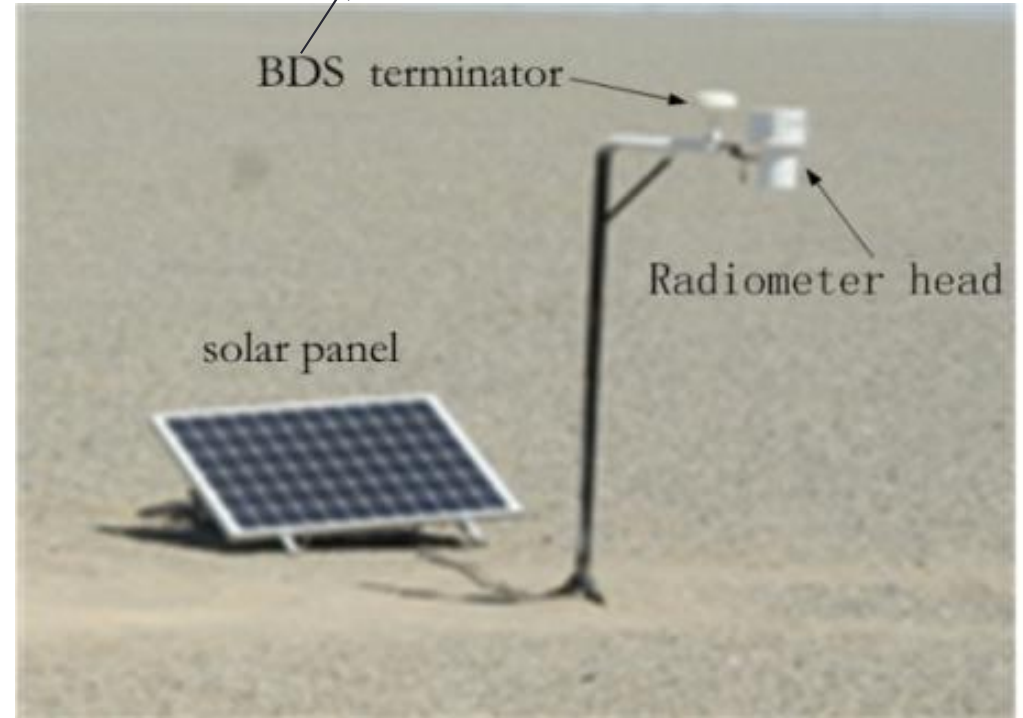
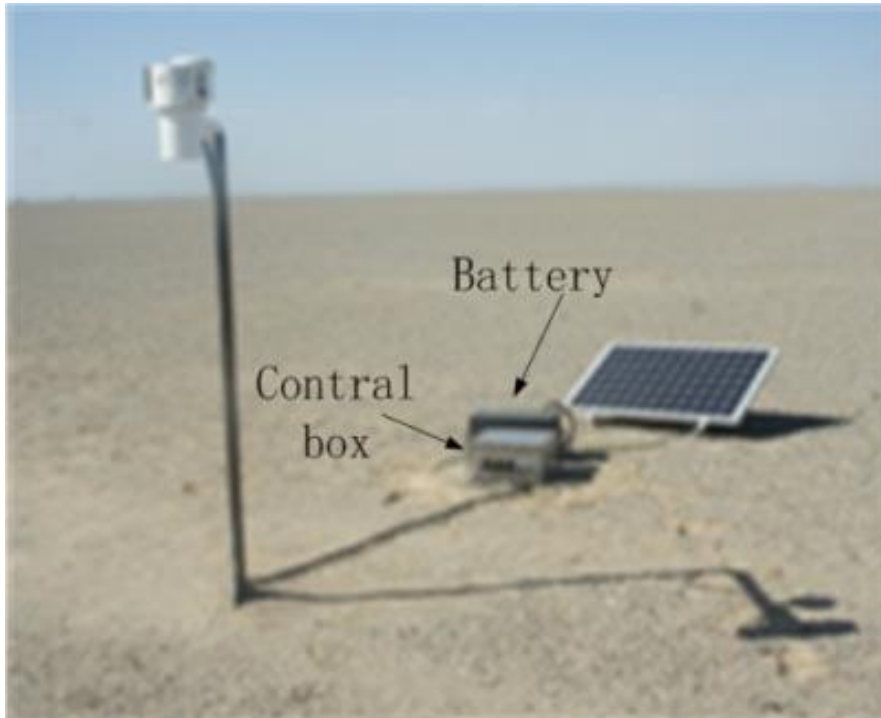


CE313



Diffuser-to-globe spectral-radiometer

Development of Automated Test site Radiometer —— Radiometer system (Chinese BeiDou Navigation Satellite System)

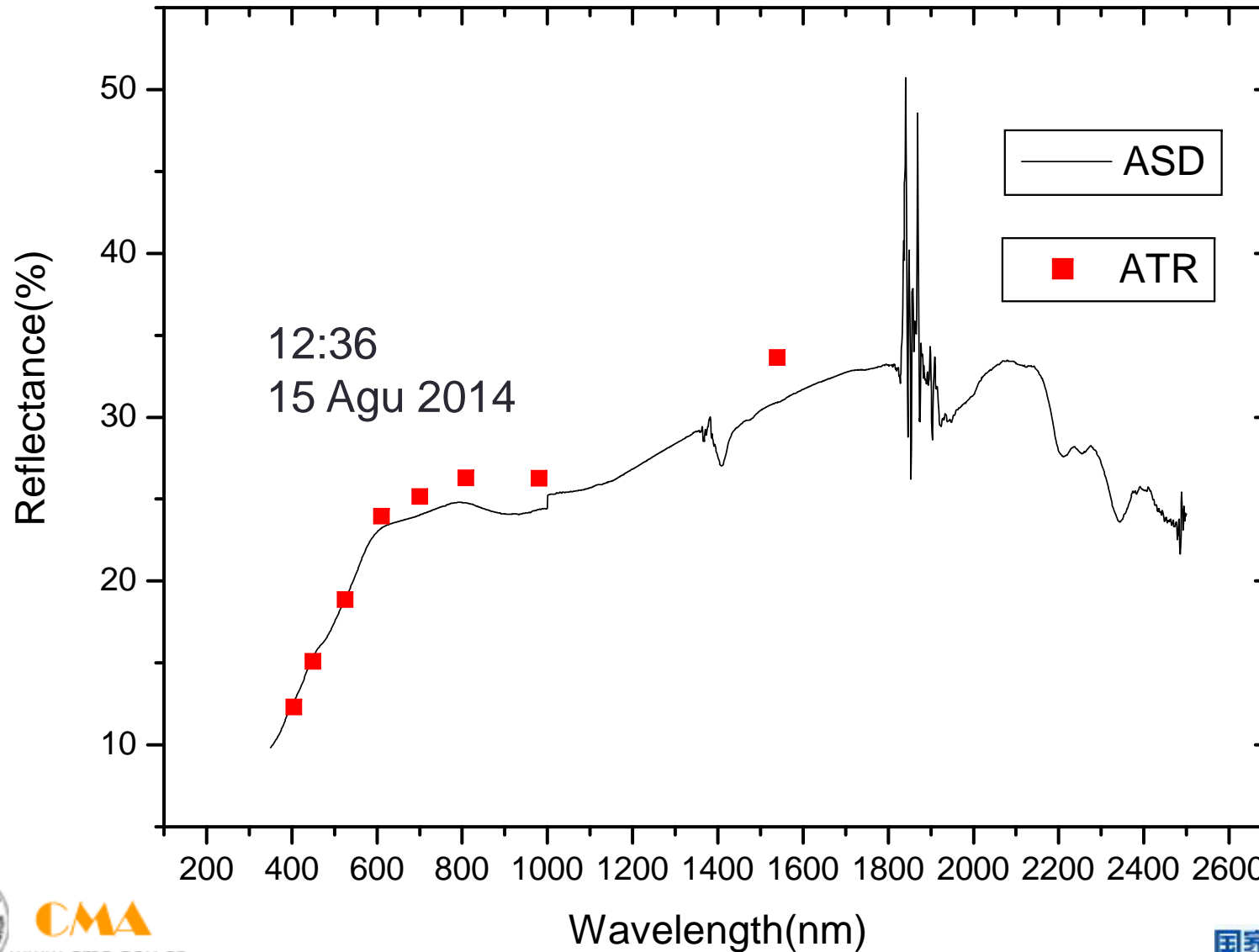


Solar panel + battery: power supply
CR1000 data logger: control center
Radiometer head: measurements

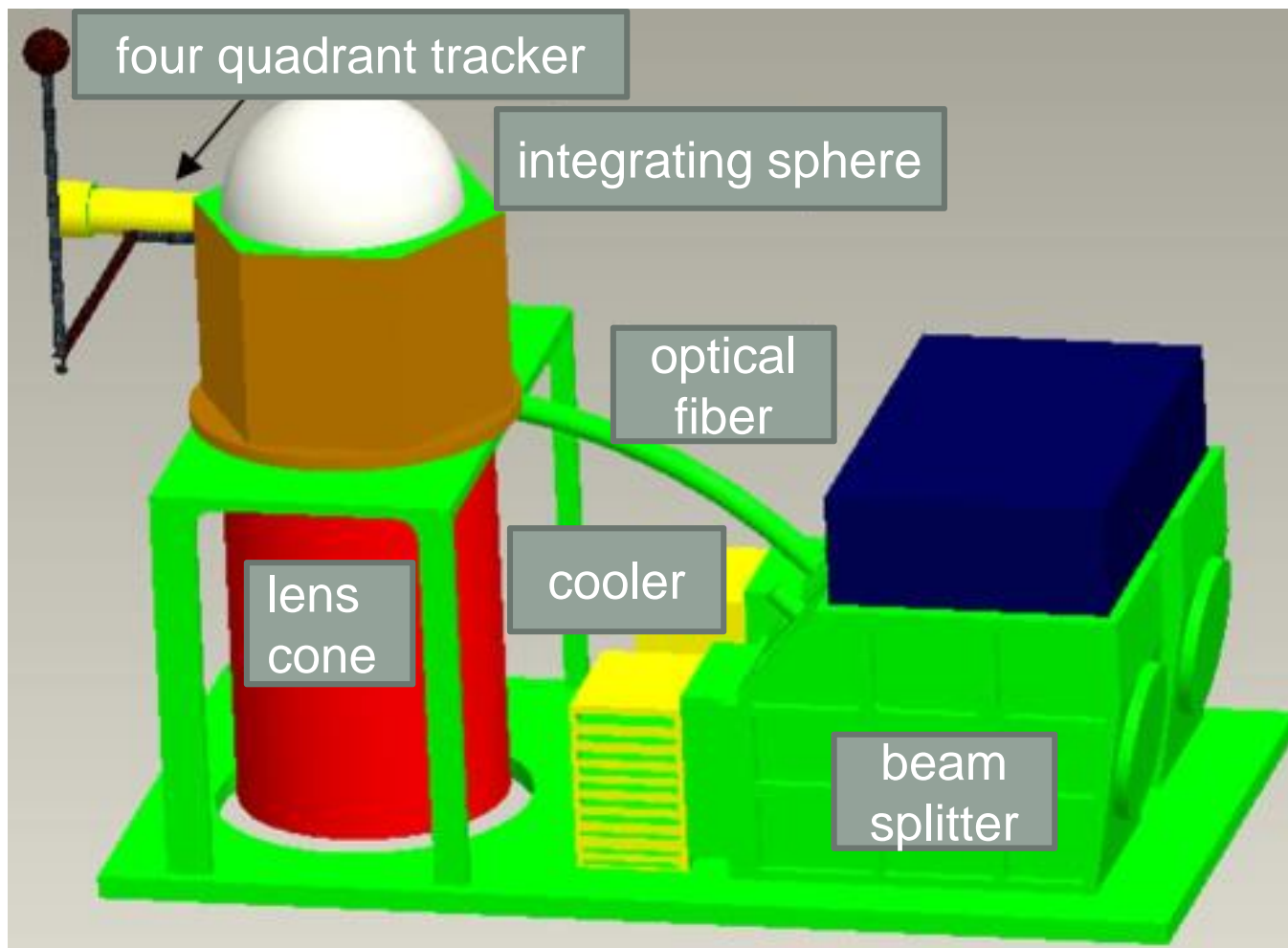
BDS terminator: long-distance data transmission

Dunhuang site campaign

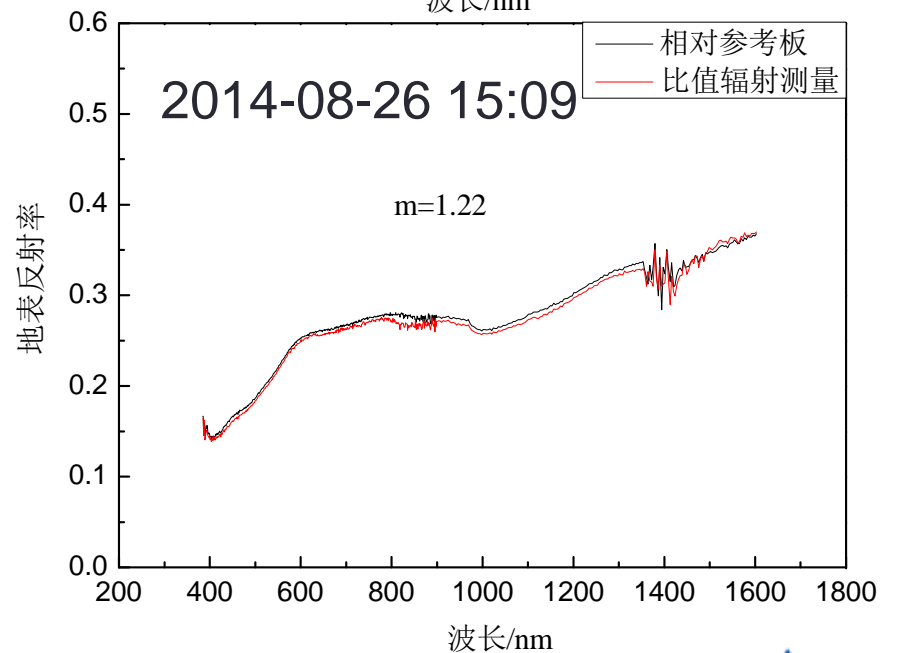
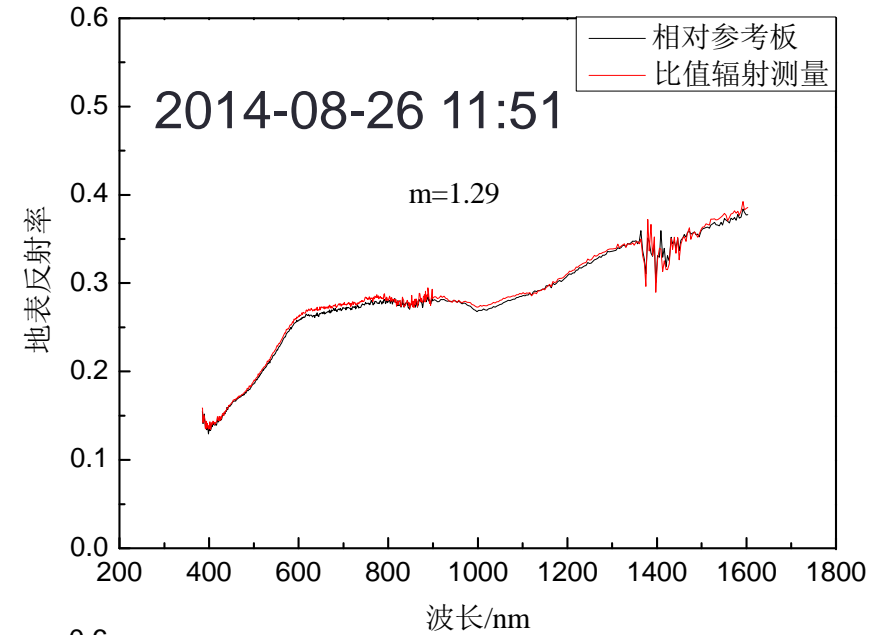
— Surface reflectance retrieval & compare



Atmosphere-Land reflectance spectral radiometer



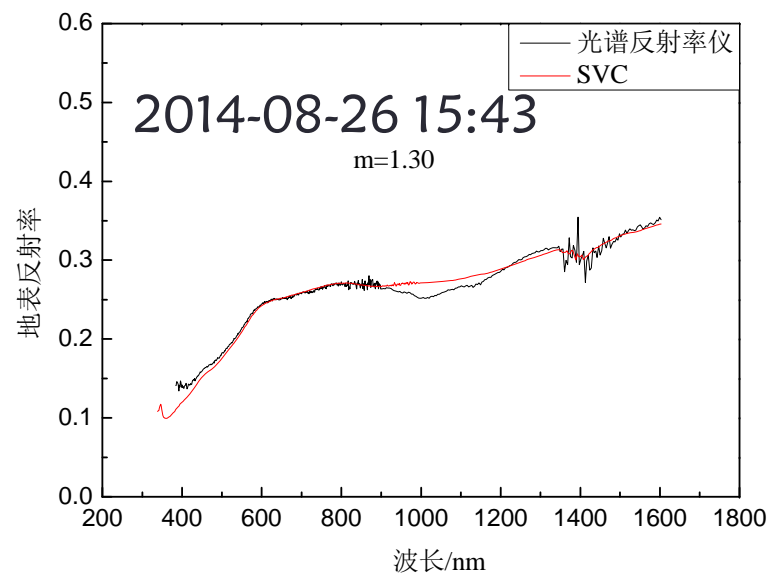
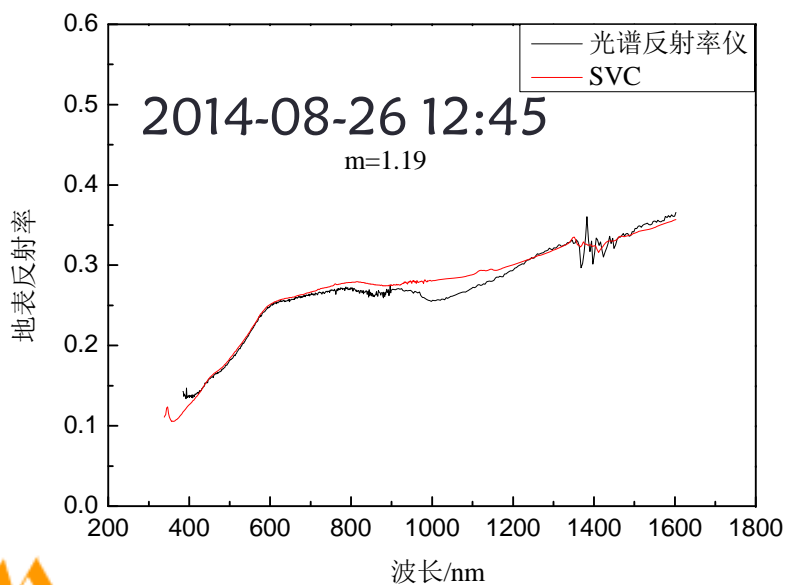
Spectral range	400~2400nm
Spectral resolution (nm)	4 (400~1000nm) 15 (1000~1700nm) 20(1700~2400nm)



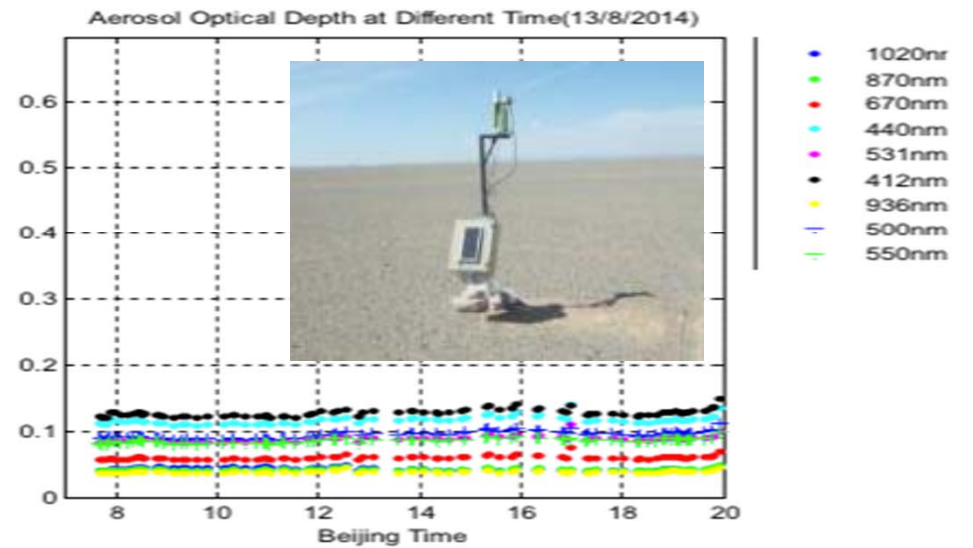
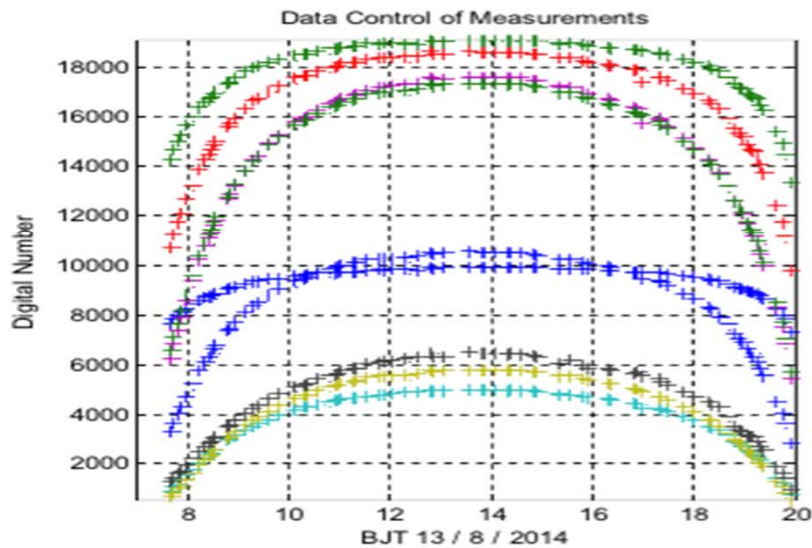
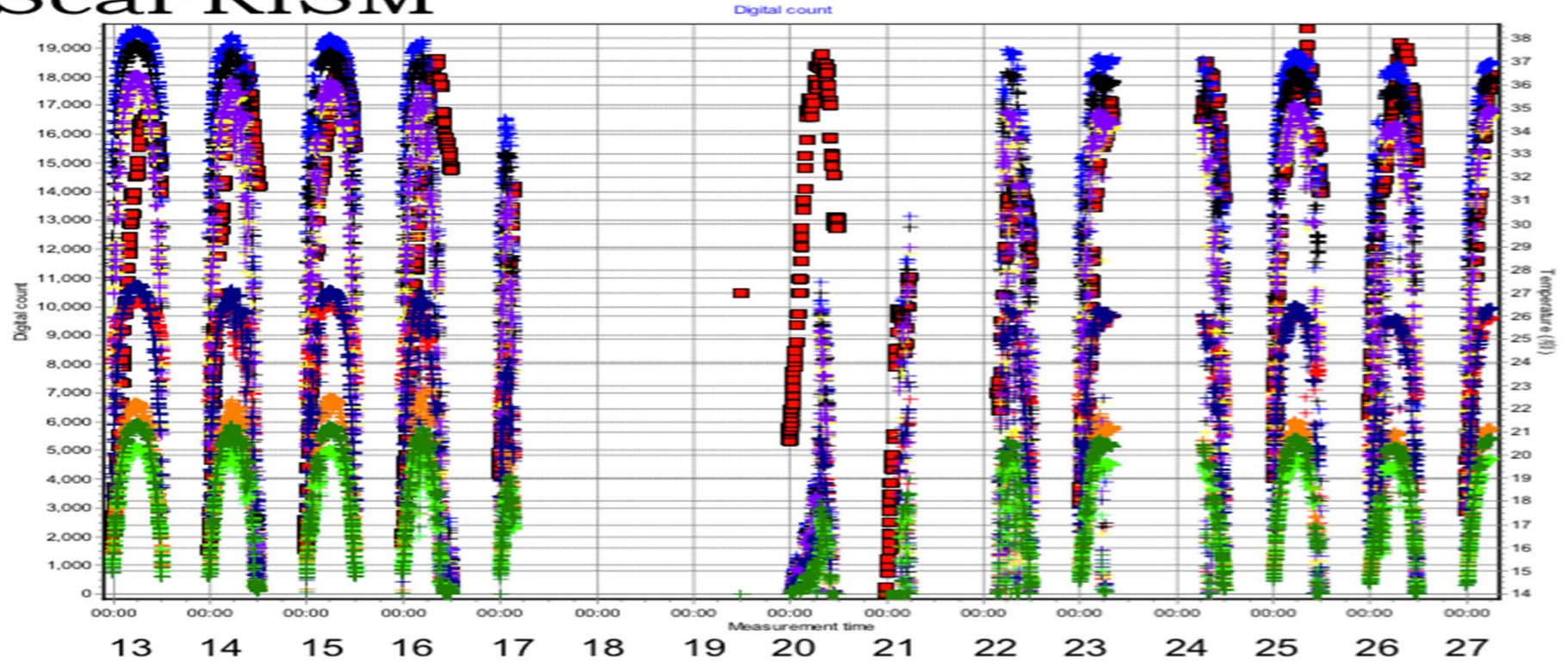
Two modes for measuring reflectance:

- Measuring target and reference board in turn
- Measuring sky radiance and surface reflected radiance

Comparing with SVC measurements



SeaPRISM



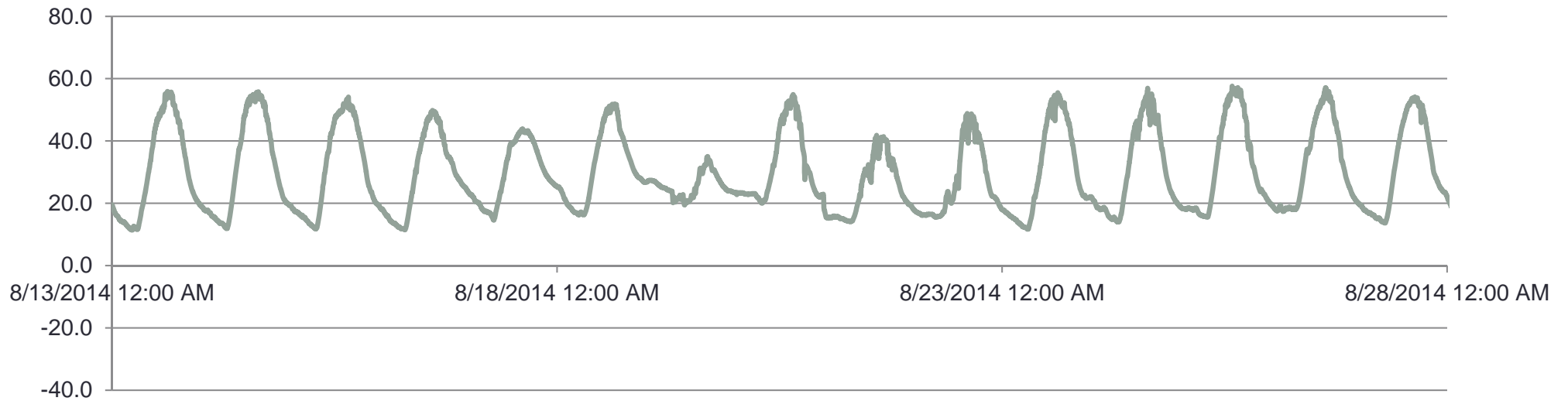


Infrared automatic observing systems

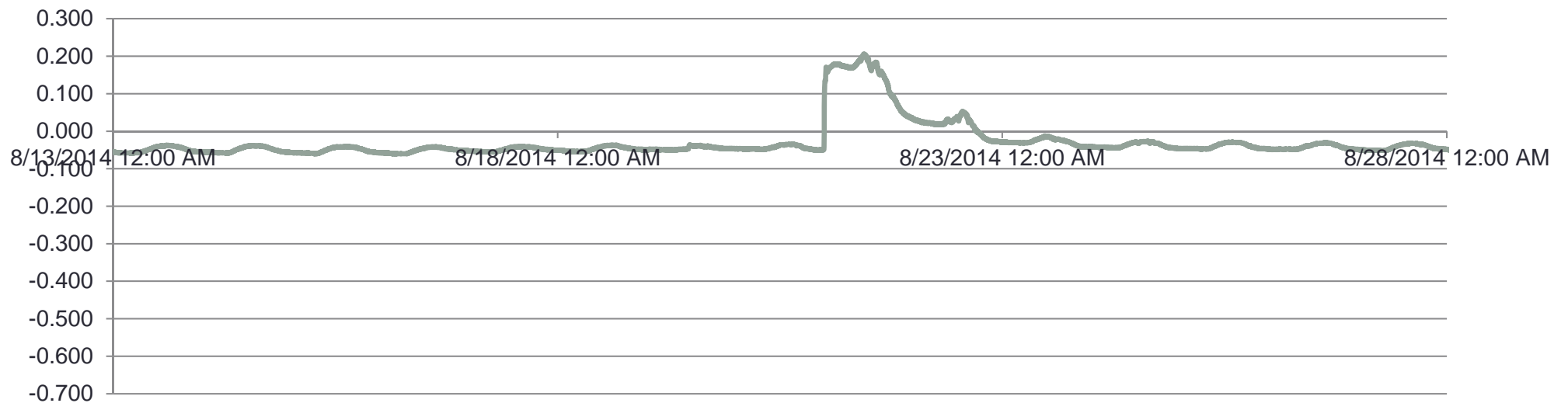




Port 1 EC-TM Moisture/Temp Temp °C



Port 1 EC-TM Moisture/Temp m³/m³ VWC



March 16, 2015

2015 GSICS Data

« 试验... » 312data 搜索 312d...

文件(E) 编辑(E) 查看(V) 工具(T) 帮助(H)

组织 包含到库中 共享 >> 收藏夹

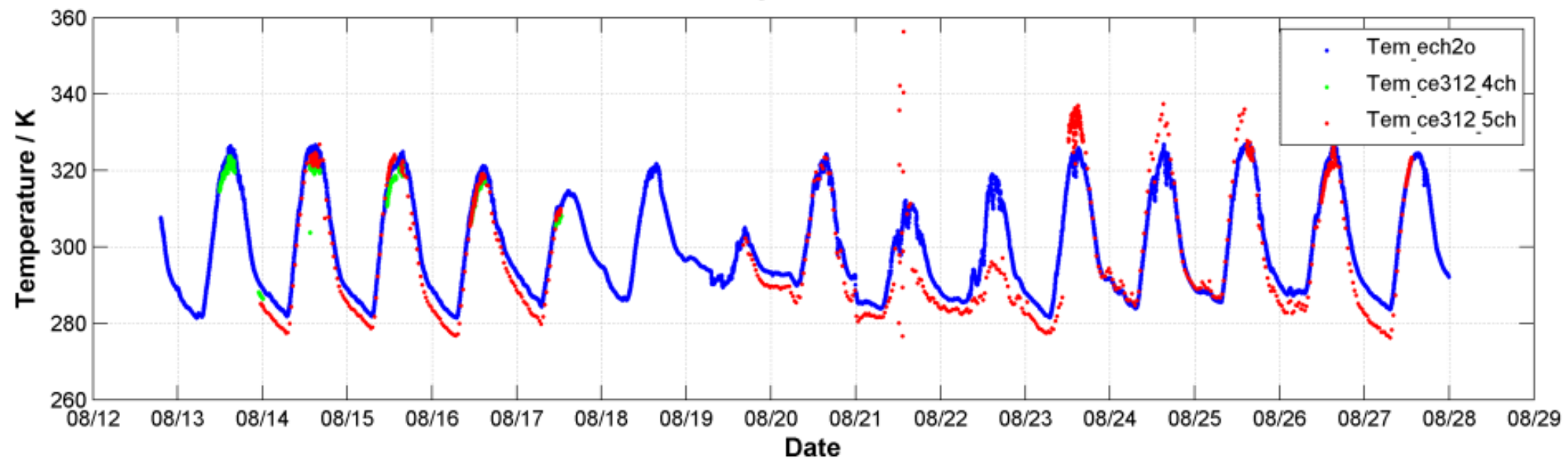
名称

2015 GSICS Data

- 暴风影音库
- 视频
- 图片
- 文档
- 迅雷下载
- 音乐

- Dunhuang_201408151339.K7 2
- Dunhuang_201408151339.R5M 2
- Dunhuang_201408151339.RAD 2
- Dunhuang_201408161317.K7 2
- Dunhuang_201408161317.R5M 2
- Dunhuang_201408161317.RAD 2
- Dunhuang_201408171236.K7 2

FY_3b VIRR CH4



计算机

- BOOTCAMP (C:)
- Macintosh HD (D:)
- yzhang (F:)

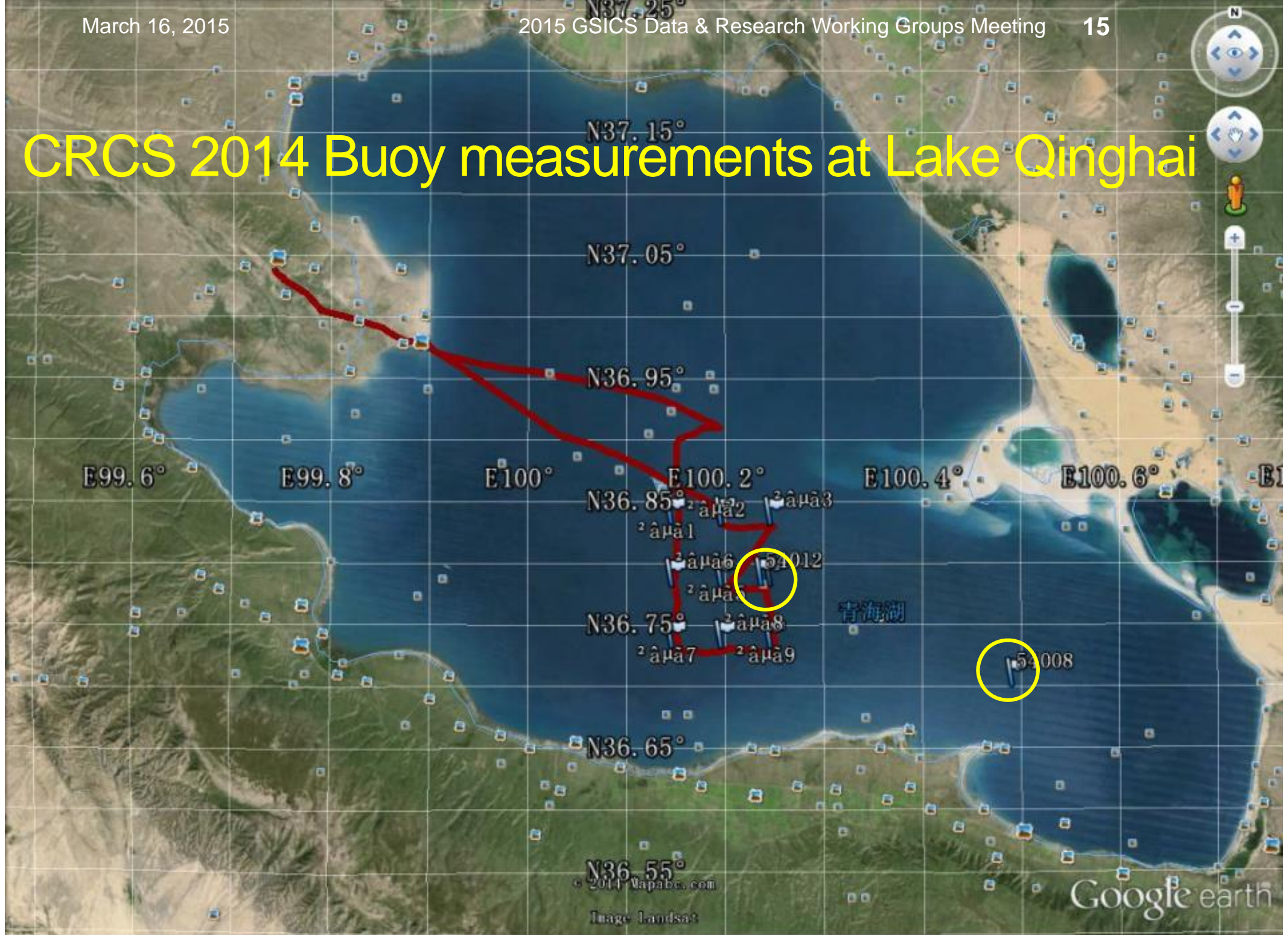
网络

- 20140816_3311-t
- 20140817_3311.k7x
- 20140817_3311-r
- 20140817_3311-t
- 20140823_3311.k7x
- 20140823_3311-r
- 20140823_3311-t
- 20140824_3311.k7x
- 20140824_3311-r
- 20140824_3311-t
- 20140825_3311.k7x
- 20140825_3311-r
- 20140825_3311-t

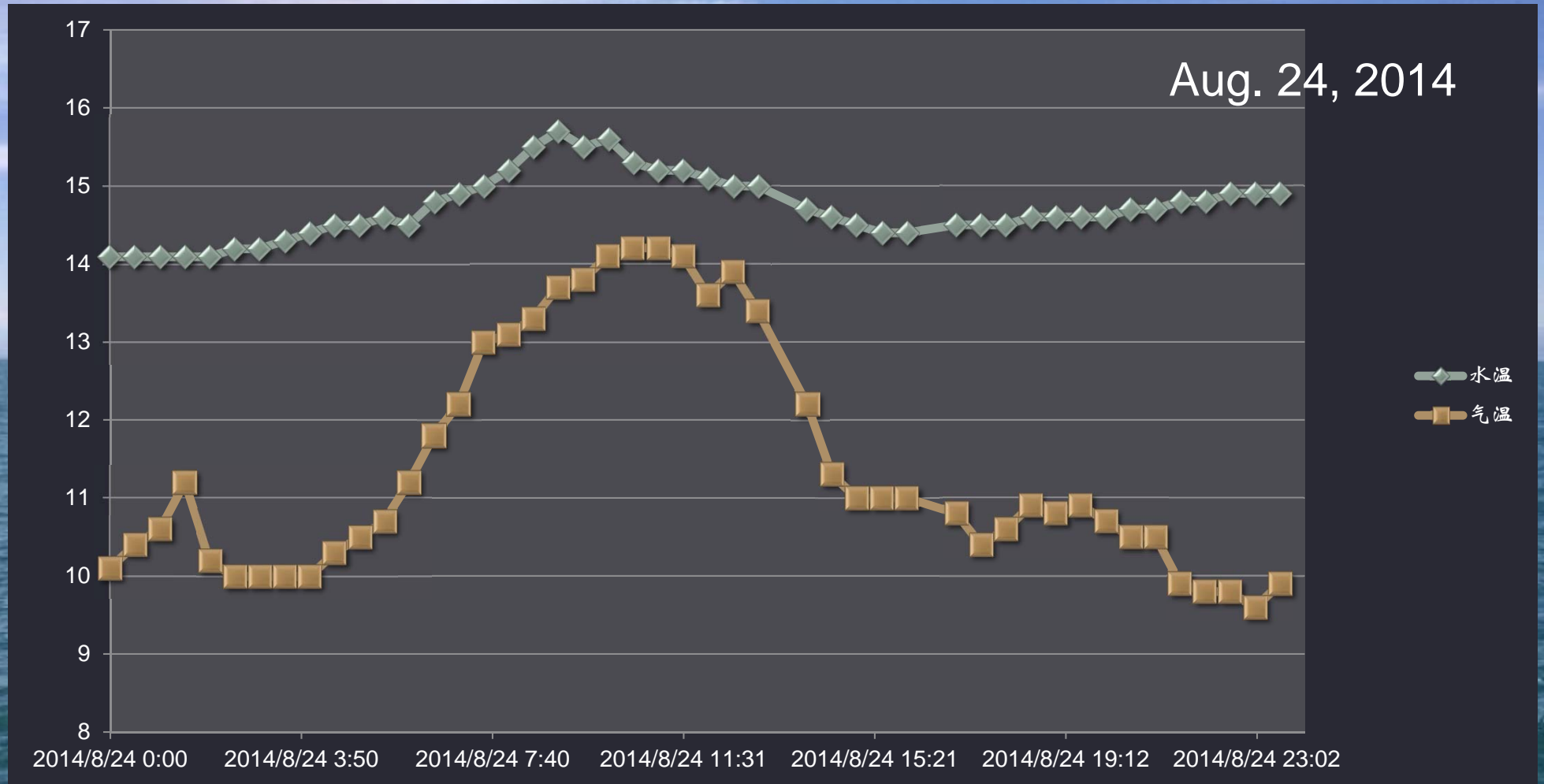
2014/8

- Dunhuang_201408231634.K7 2
- Dunhuang_201408231634.RAD 2
- Dunhuang_201408251434.K7 2
- Dunhuang_201408251434.RAD 2
- Dunhuang_201408251701.K7 2
- Dunhuang_201408251701.R5M 2
- Dunhuang_201408251701.RAD 2
- Dunhuang_201408261135.K7 2
- Dunhuang_201408261135.RAD 2
- Dunhuang_201408261642.K7 2
- Dunhuang_201408261642.R5M 2
- Dunhuang_201408261642.RAD 2
- Dunhuang_201408271348.K7 2

CRCS 2014 Buoy measurements at Lake Qinghai

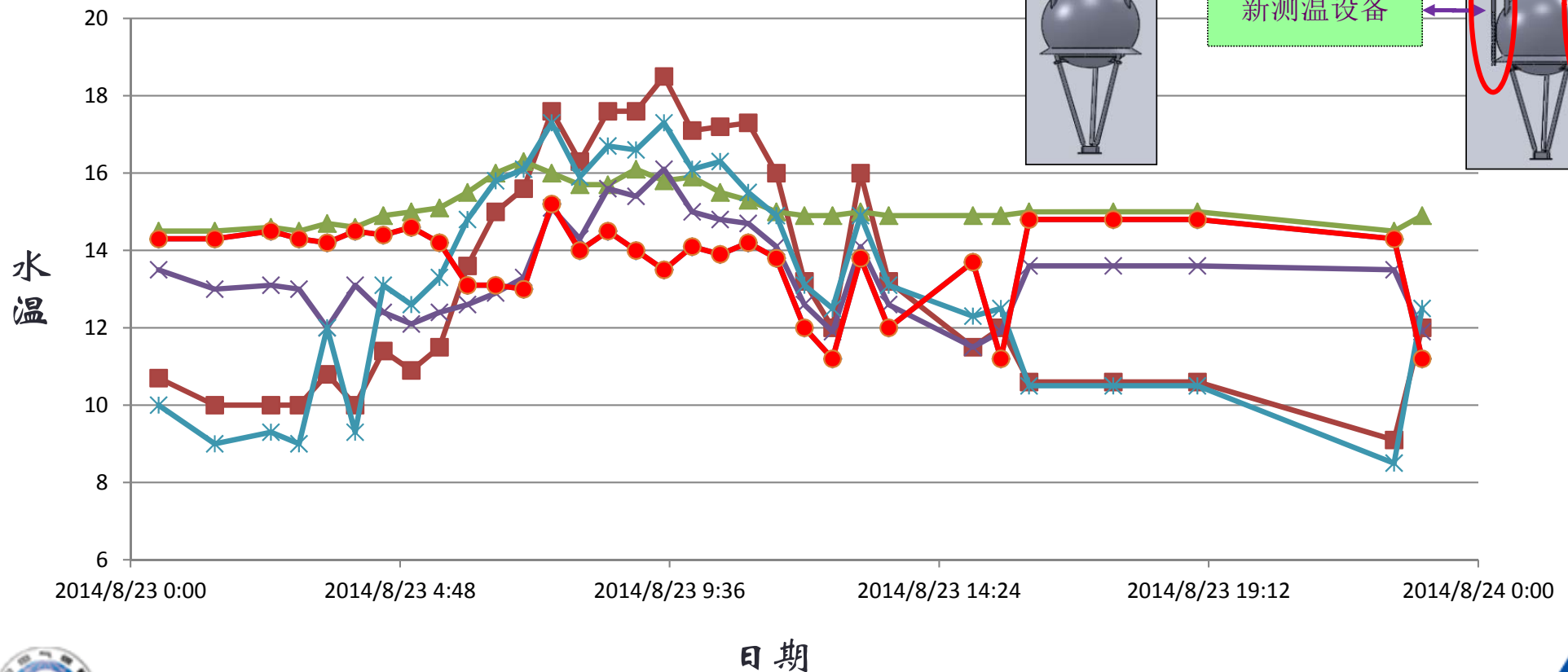


Buoy data



Upgrading of buoy measurements

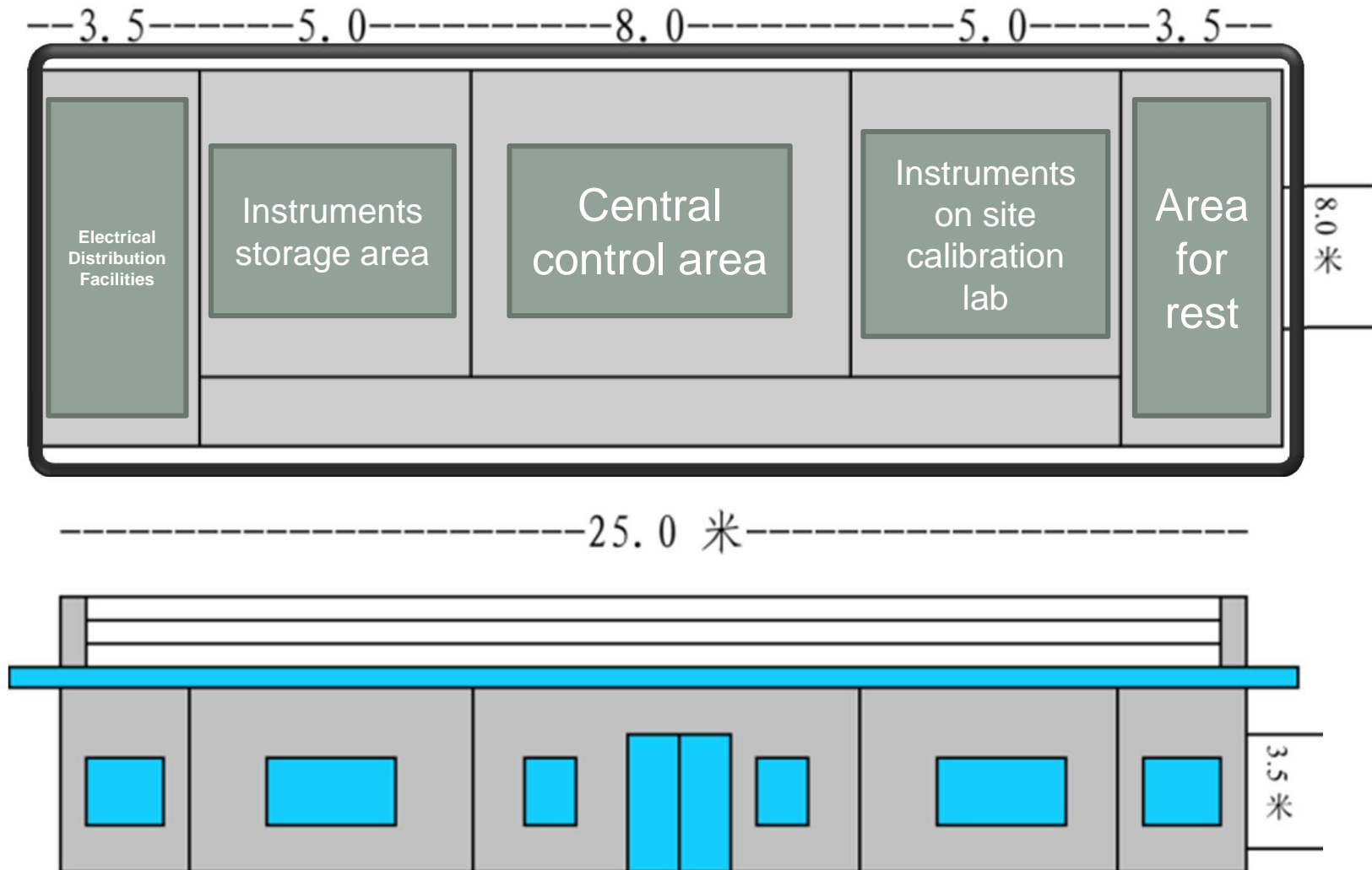
Two set of temperature profile measuring equipment were added on buoy #54008.



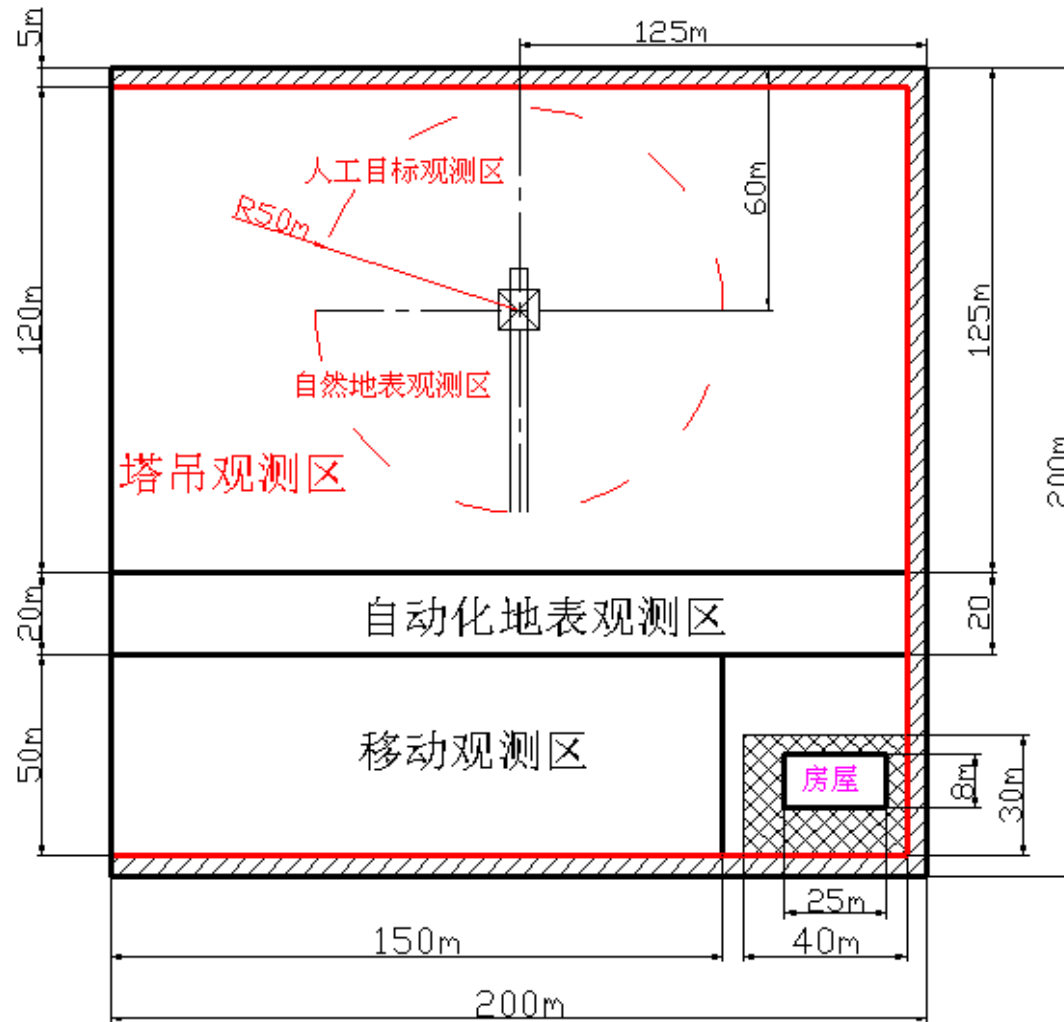
Upgrading and updating of the field surface and atmospheric parameters observing system

- Constructing field observing station, including
 1. House
 2. Observing field
 3. Instrument platforms
 4. Power supply
 5. Tower crane
 6. Road
 7. Safeguard facilities

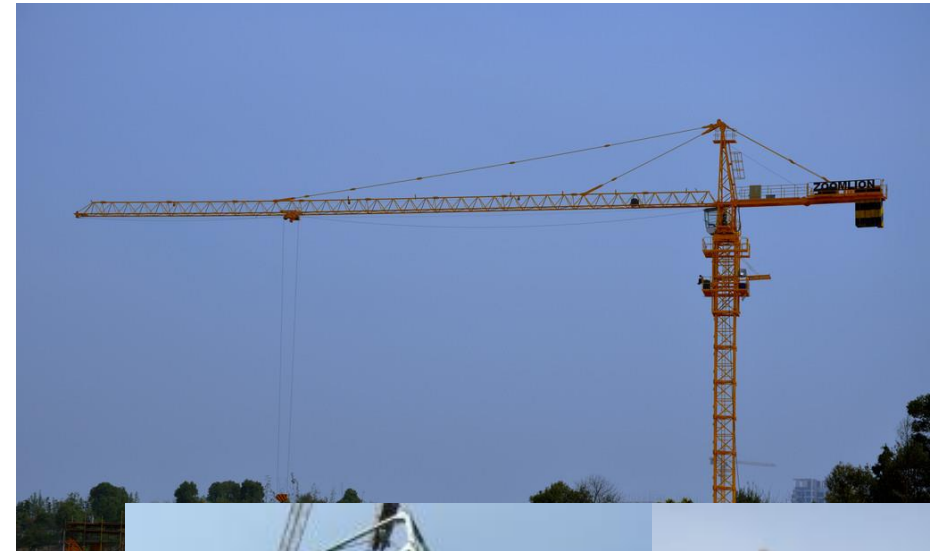
House



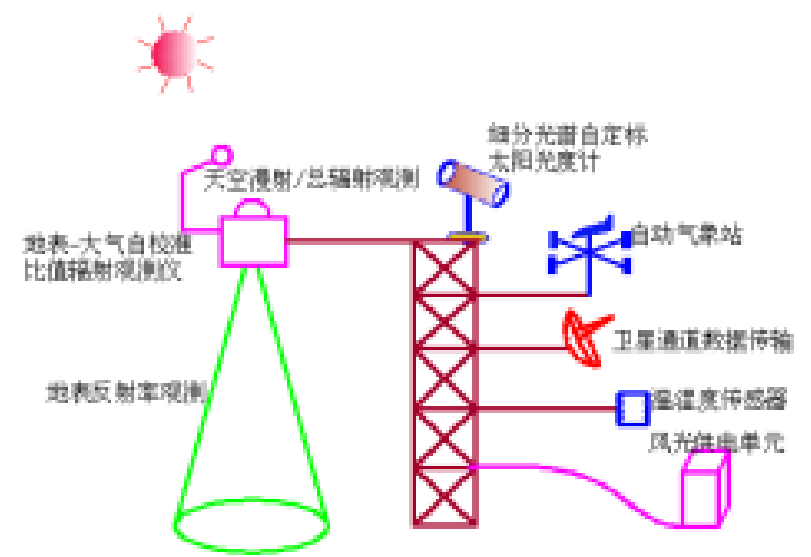
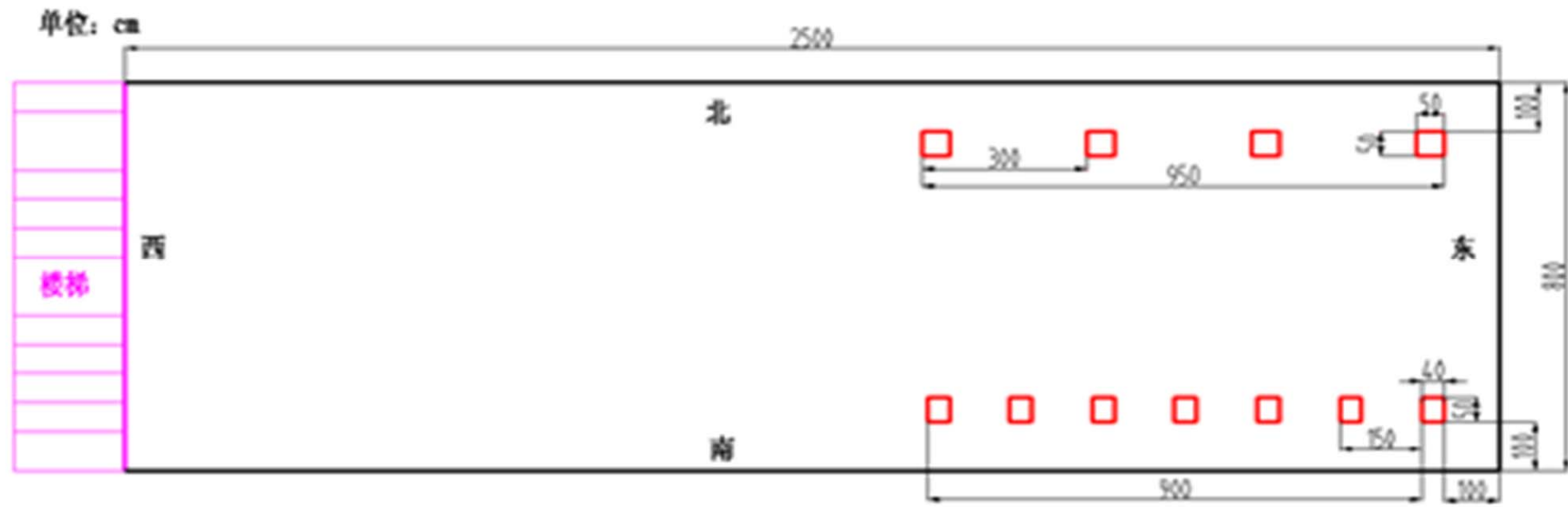
Observing field



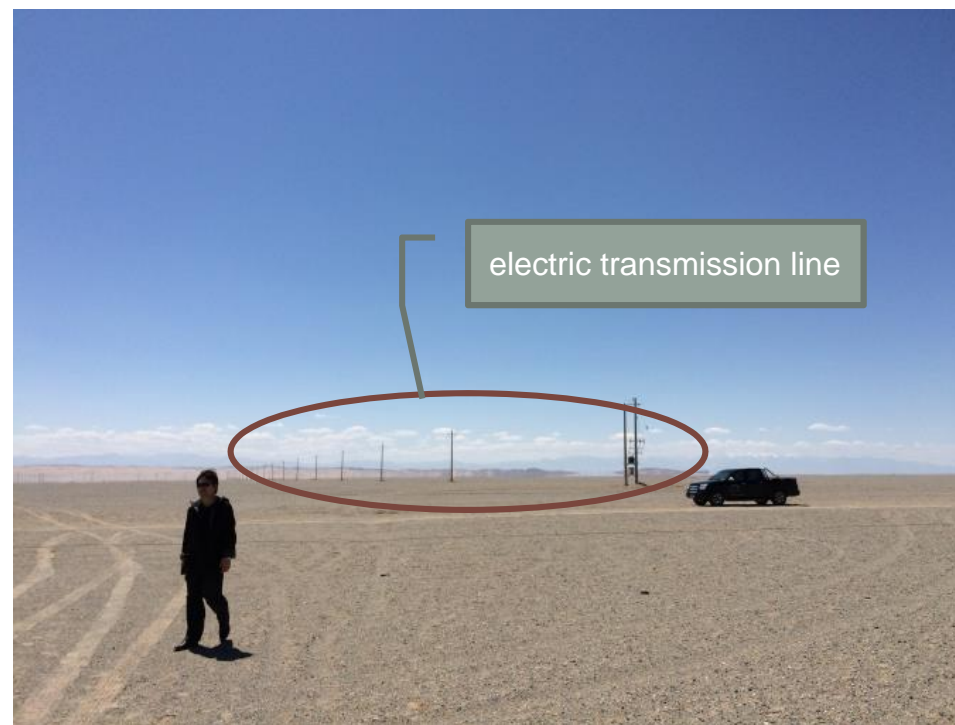
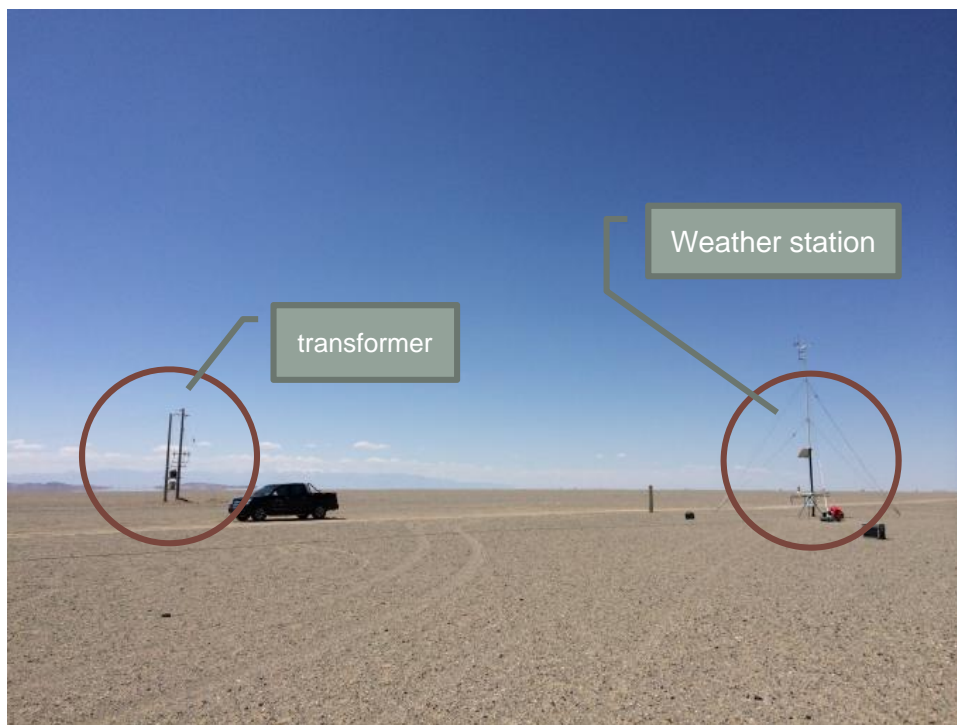
Tower crane



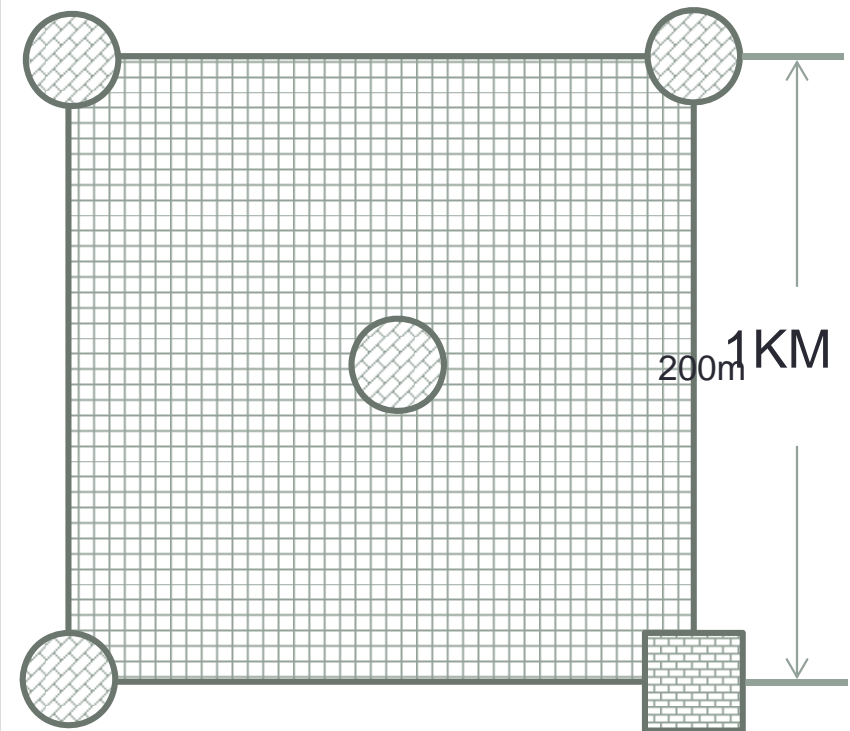
Instrument platforms



Power supply

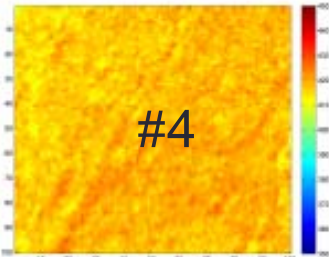
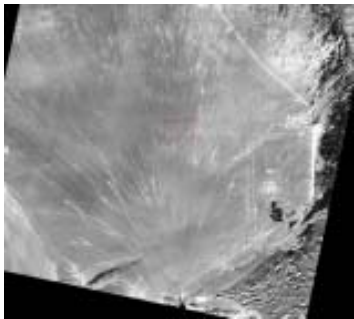


Field Observation Scheme



Location

ZY-3 2m resolution image



200m*200m



#	200M*200M				1KM*1KM			
	MIN	MAX	MEAN	STD	MIN	MAX	MEAN	STD
1	403	427	411.1691	2.6142	390	558	417.2796	10.9696
2	402	430	412.7926	3.7837	391	519	417.5855	10.8374
3	405	424	414.0830	2.5045	398	517	415.8088	7.2823
4	407	428	418.1411	2.6375	387	452	418.0651	4.4489
5	412	432	422.0839	2.9417	386	452	422.9840	4.3302
6	404	444	421.9946	4.3006	382	538	421.6267	5.6120
7	402	429	417.6972	3.3489	395	467	420.0311	4.0627
Central area	335	622	416.3005	8.1800	335	641	417.6138	13.8063
	5km	*	5km		10km	*	10km	

Discussions and future work

- Basic constructions will be finished before this September.
- The field observing station will be an open field test and exchange platform for sharing of test data, research and infrastructure, promote exchanges and cooperation between the relevant disciplines and units.
- How can these continuous, automatic, operational field observing data serve for GSICS inter-calibration?
 - Validation for GSICS correction
 - Level 1 data quality control and validation
 - Traceability to absolute calibration standards

Thanks for your attentions!

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