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Study on Application of Aero-photography and Remote Sensing Systems by UAV in Mapping of Gansu West Plateau Mining Area

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Recovery

from disaster

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Recovery

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Plateau

Topography

1:2000

UAV

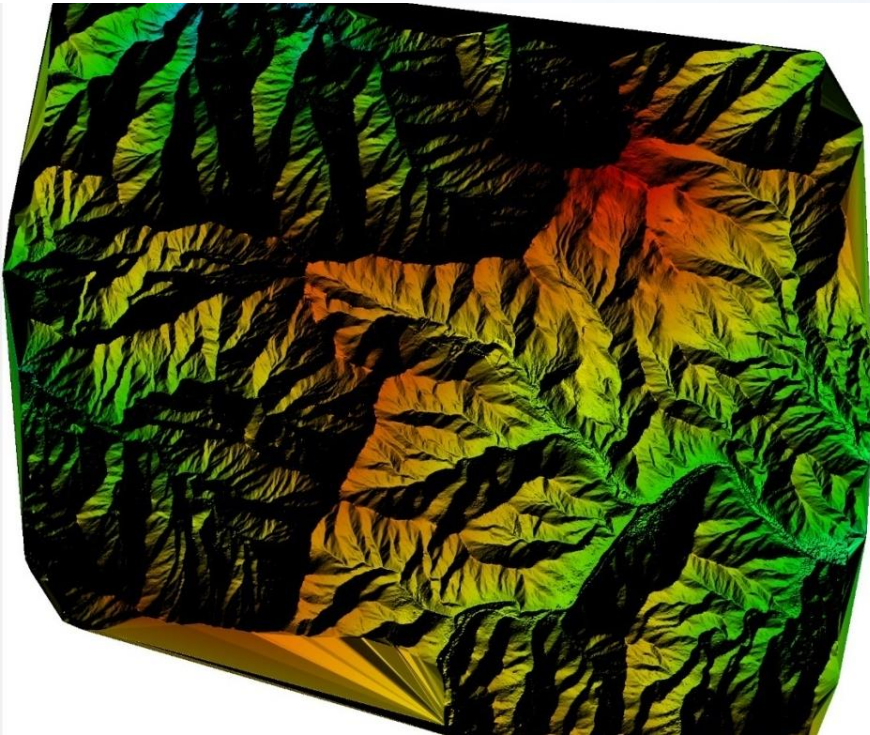


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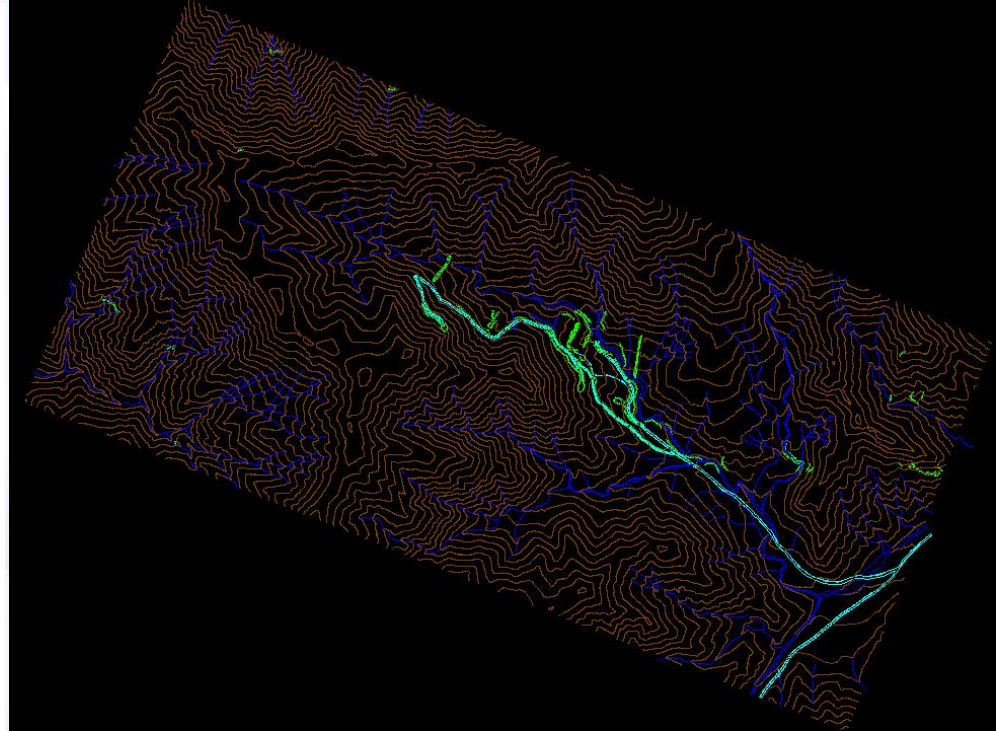
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Recovery

from disaster



• DSM



DLG

Large

Efficient

Lowcost

Key Technology

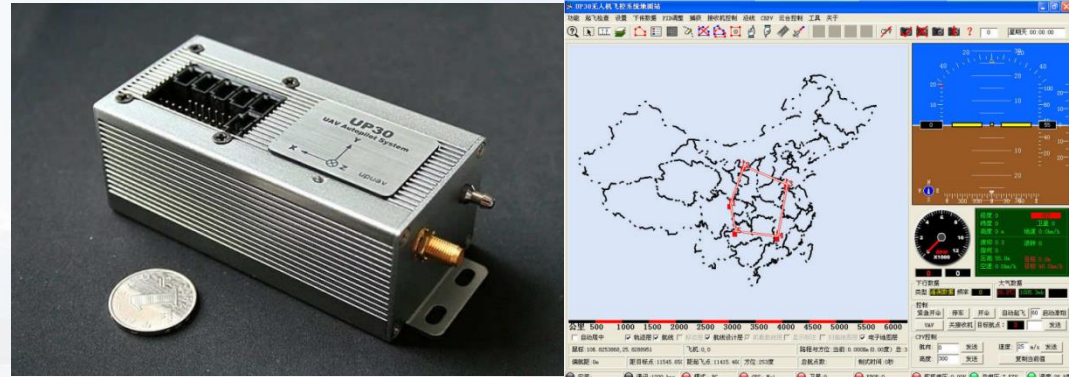
1.UAV



Wing: 2590mm

Max weight: 1.7kg

Duration time : 2h



UP30

Ground Control Station

Camera : Nikon D800



Key Technology

1.UAV



Sortie	Forward overlap	Side overlap	Forward interval /m	Exposure interval /m	GSD/m	Number of photos
1	75	45	300	100	0.14	987
2	75	45	300	100	0.14	988

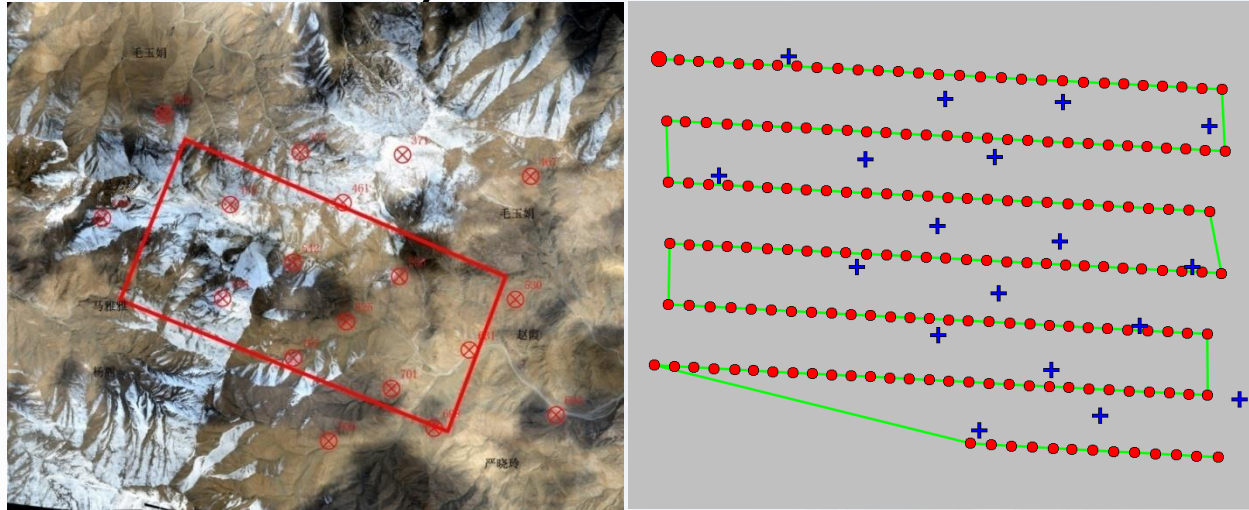


The ground resolution : 0.14m
 Air relatively height : 1000m
 Absolute flying height : 4200m



Key Technology

2. Photo control survey



The first flights

Lay 18 landmark control points.

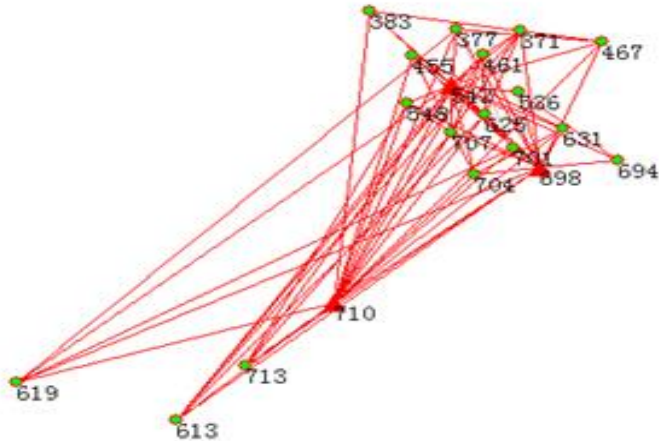
The second flights



Key Technology

2. Photo control survey

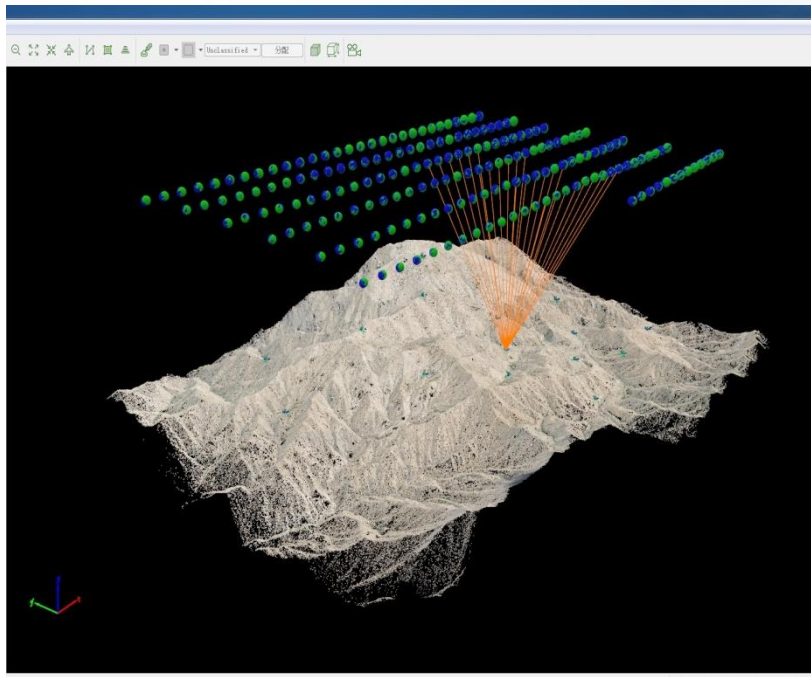
Use PPP and fast static GPS technology to measure the GCPs



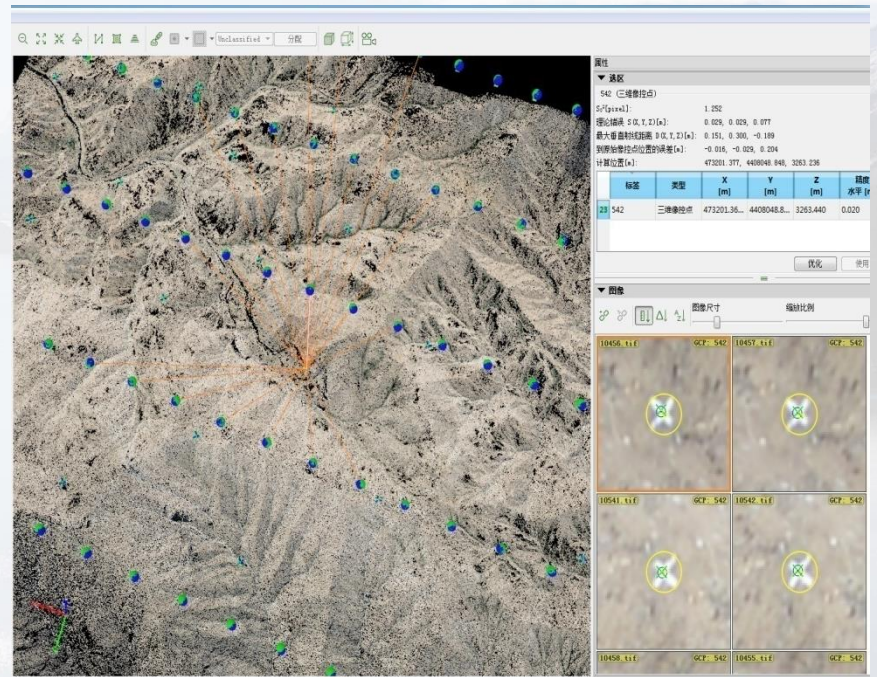


3.Date process

Use Pix4DMapper to add GCPs and make DSM and DOM



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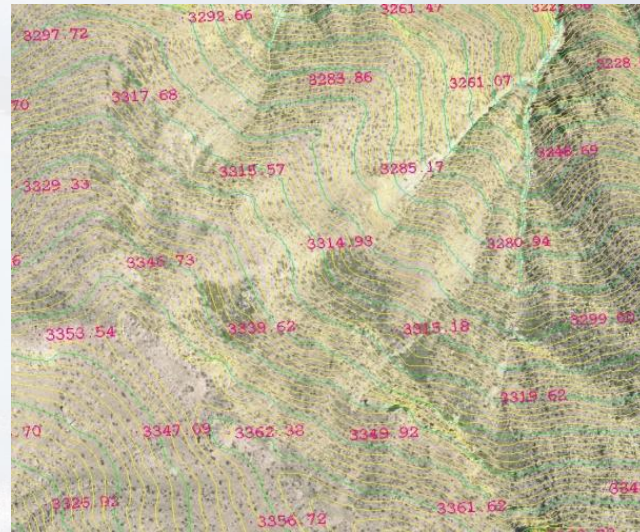
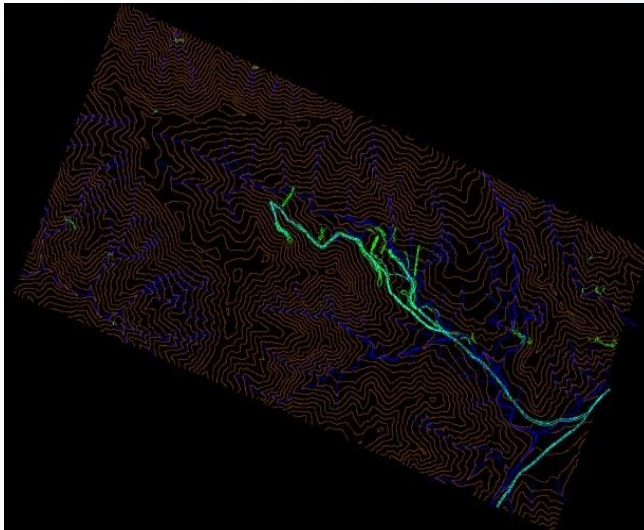
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3.Date process

Aerial triangulation and Stereomapping

Use ImageSation SS, VirtuoZoNT and other softwares
Create 3 square kilometers of 1 : 2000 topographic maps.





Compared with the digital surveying and mapping

Aerial and field Photo Control measurement
12 people 3 days

Data processing
6 people 7 days

Provide DOM, DSM ,DLG,DEM

Costs only about 1/3 of the conventional measure

Digital surveying and mapping?

A lot of people and time



Conclusion

Obvious advantages of the aerophotogrammetry by UAV to make topographic map in western Gansu mine

- Greatly reduce the workload of field measurements, besure worker safety;
- Meet the accuracy requirements specification;
- Play more important role in the digital mine construction;
- Promoted in a particularly difficult area, such as desert;
- Aerial aircraft fly to reach the absolute 4200m steadily.



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Recovery

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Thank you



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