Community Proposal
Mohole Site Survey Northeast of Oahu

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Requirements for Mohole Drilling Site

- Normal crustal thickness ~6km
- Homogeneous and layered crust and mantle structure
- Clear identification of Moho-discontinuity
- Simple tectonic setting
- Crust formed at paleo-latitude >15°

- Lithosphere created at fast-spreading ridge

Requirements for Mohole Drilling Site

- Water depth <~4000m
- Temperature <200°C at Moho
- Near large port(s)
- International waters or EEZ of IODP country
- Feasibility of state-of-the-art seismic survey
- Stable weather condition for long term (>1yr)

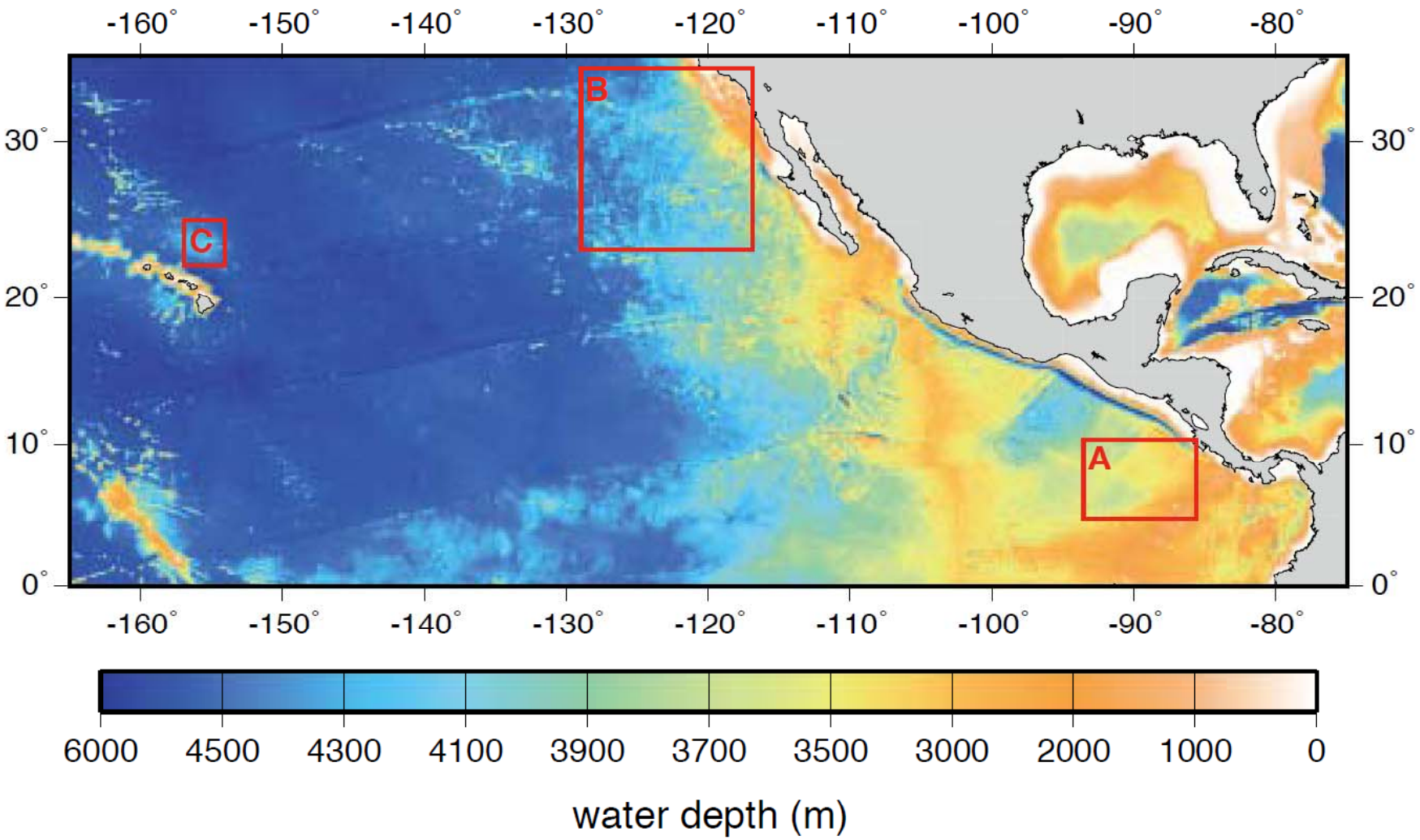
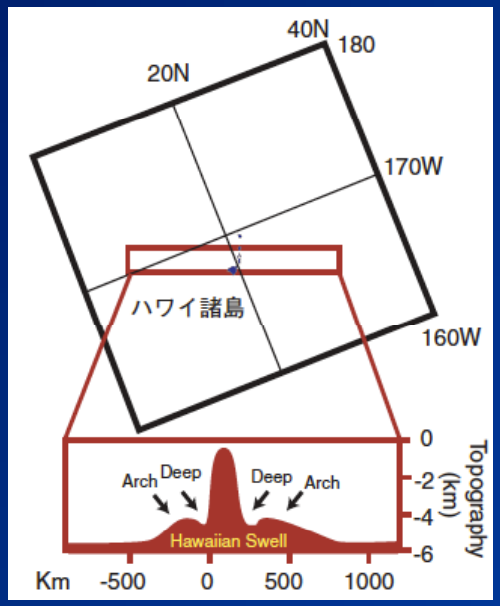


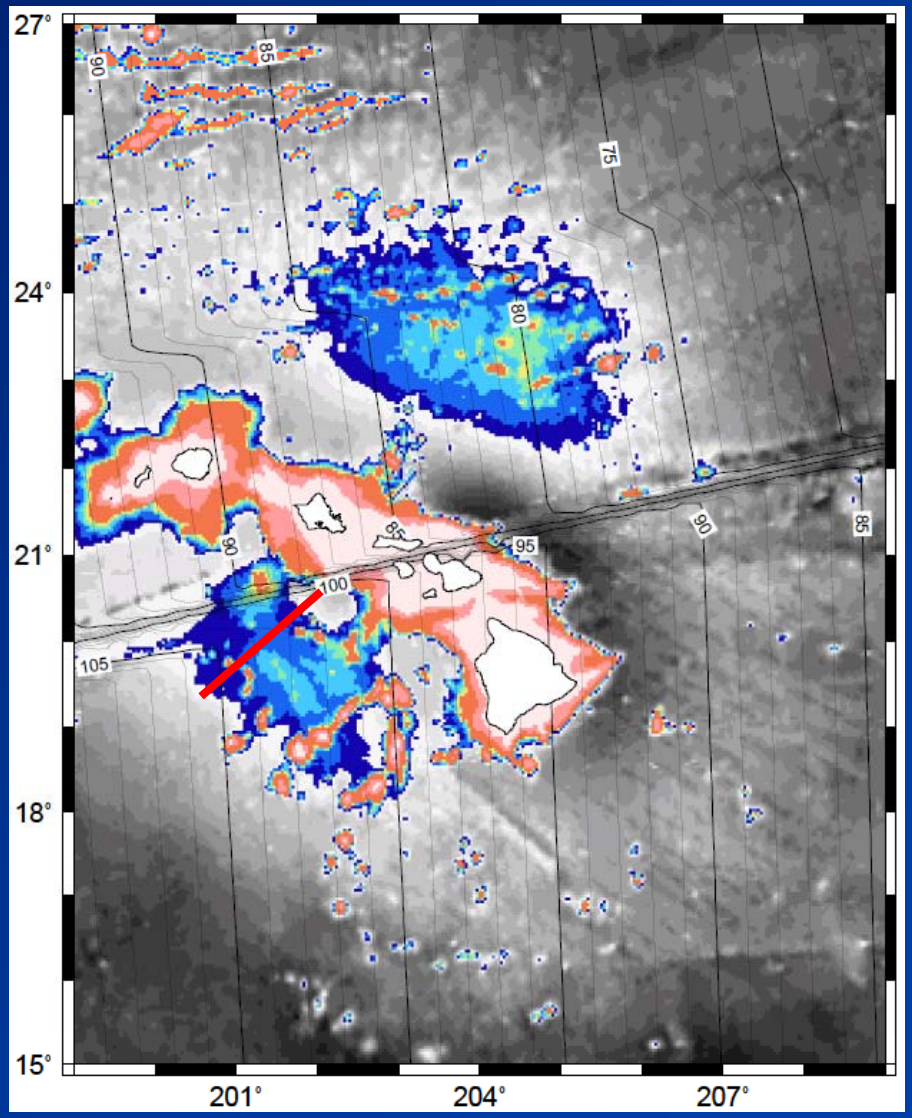
Figure 3. Bathymetric map showing the three selected areas for large-scale MoHole site survey: [A] Cocos plate region, [B] off Southern/Baja California region, [C] off Hawaii region.

From Mohole workshop report
(*Scientific Drilling*)

NE of Oahu

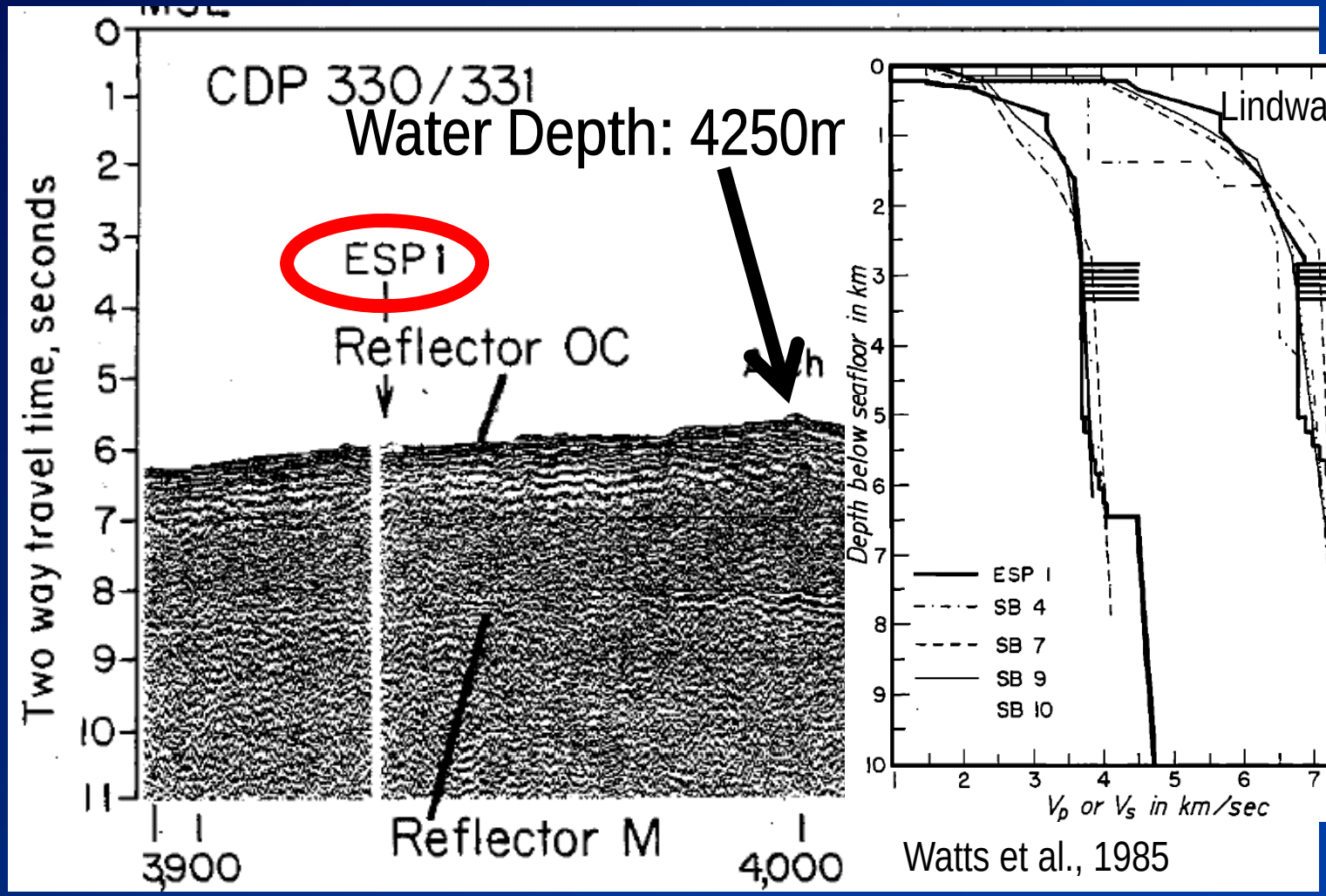
- Crustal age ~80Ma
- Water depth <4500m in Hawaiian Arch due to lithospheric flexure
- Historical Mohole candidate site





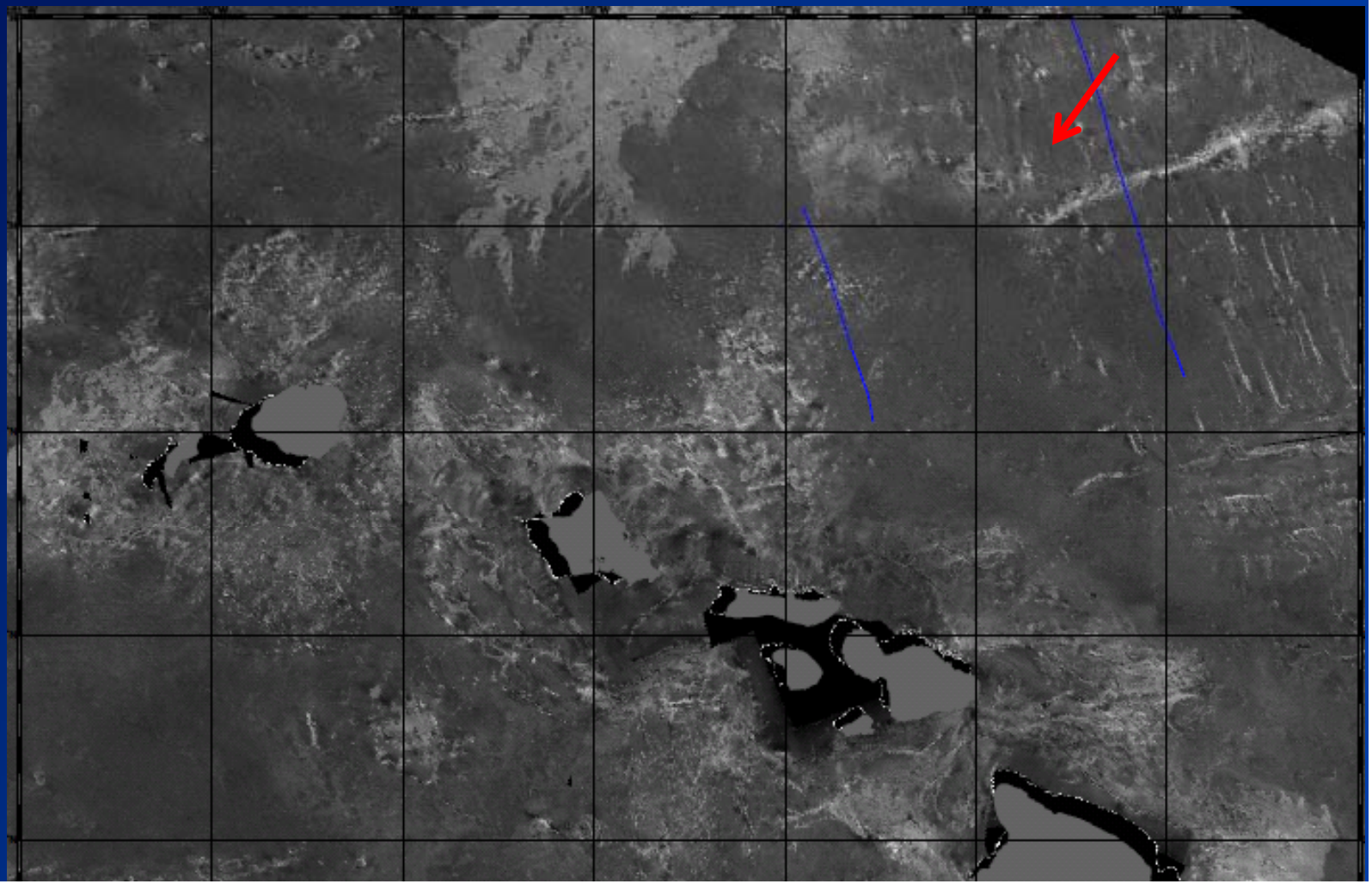
Previous Seismic Survey Results

- SW of Oahu:
  Clear Moho discontinuity, Crustal thickness 6.2km



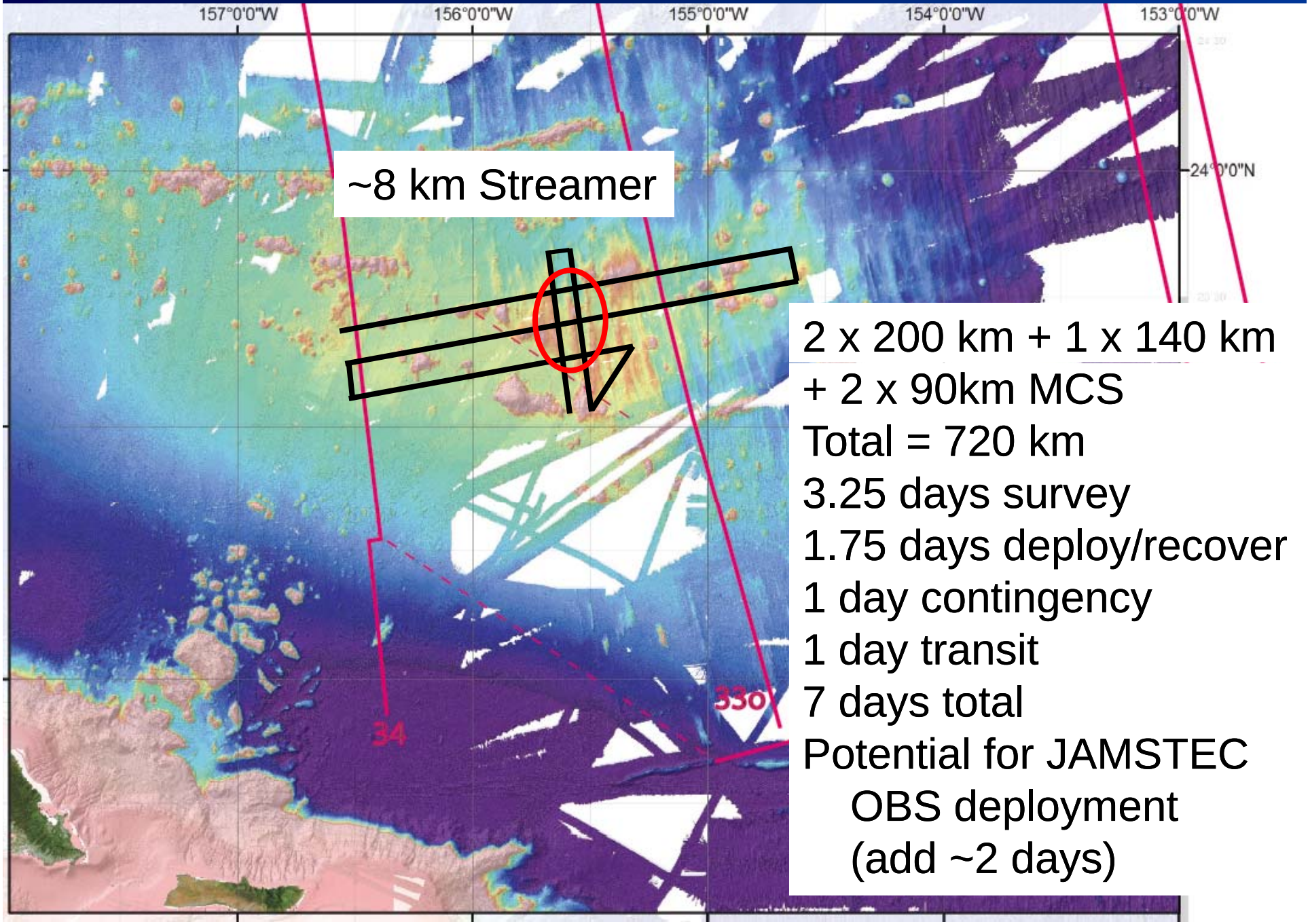
Arch Volcanism

- Arch volcanism overprints or contaminates seafloor (crust and mantle) structure



Normark et al., 1989

NE of Oahu (<4100 m, 80 Ma, 1.3 HFU)



2 x 200 km + 1 x 140 km
+ 2 x 90km MCS
Total = 720 km
3.25 days survey
1.75 days deploy/recover
1 day contingency
1 day transit
7 days total
Potential for JAMSTEC
OBS deployment
(add ~2 days)

Survey Details

7 days
10-12 km Streamer
Onboard initial processing
    Finish at UH immediately after cruise
Open to students/Post-docs from any institution

~3-4 students/postdocs
    Arrive early for 2 days for processing familiarization
    Lead on-board processing
    Stay ~ 1 week after to finish processing

Data immediately available to the community
    Field data (raw + edited)
    Initial stack + post-stack migration