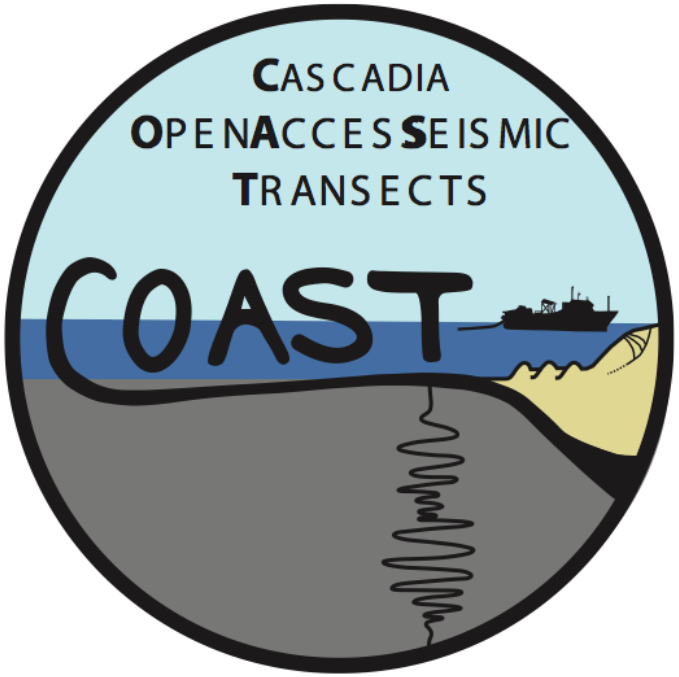
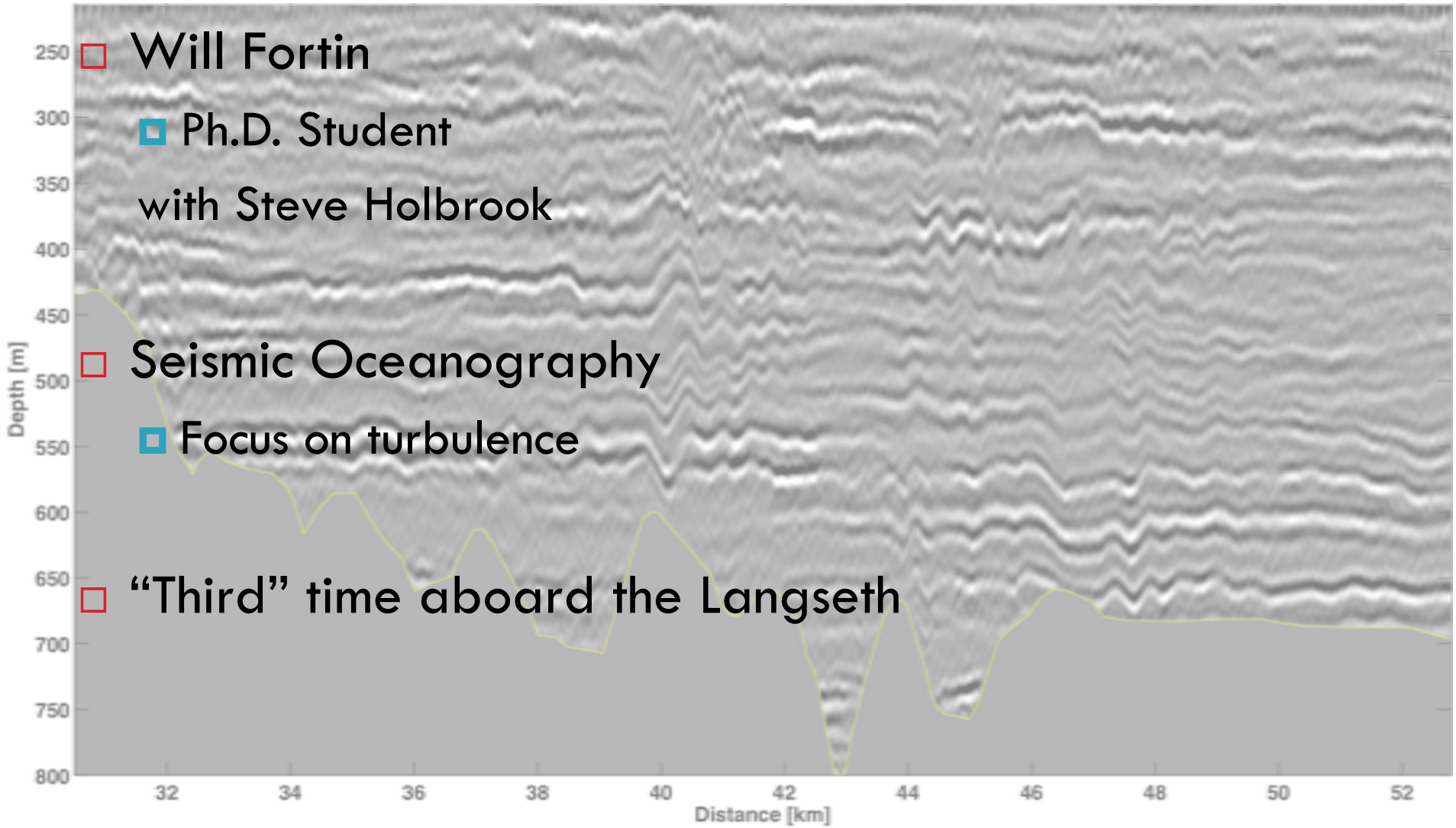


MGL 12-12 : CASCADIA OPEN-ACCESS SEISMIC TRANSECTS (COAST)

Will Fortin December 2, 2012

Introduction



- Will Fortin
  - Ph.D. Student

  with Steve Holbrook
- Seismic Oceanography
  - Focus on turbulence
- “Third” time aboard the Langseth

MGL 12-12 : Tasks

- Plan and execute supplementary oceanography data collection
  - XBTs and XCTDs
- Teach seismic data processing for open-access participants
  - Post-Stack Time Migrations in Echos
- Current Work
  - Source array comparison of plate boundary

MGL 12-12 : Teaching

- 20 Scientists on board
  - Most had little experience seismic data processing

MGL 12-12 : Teaching

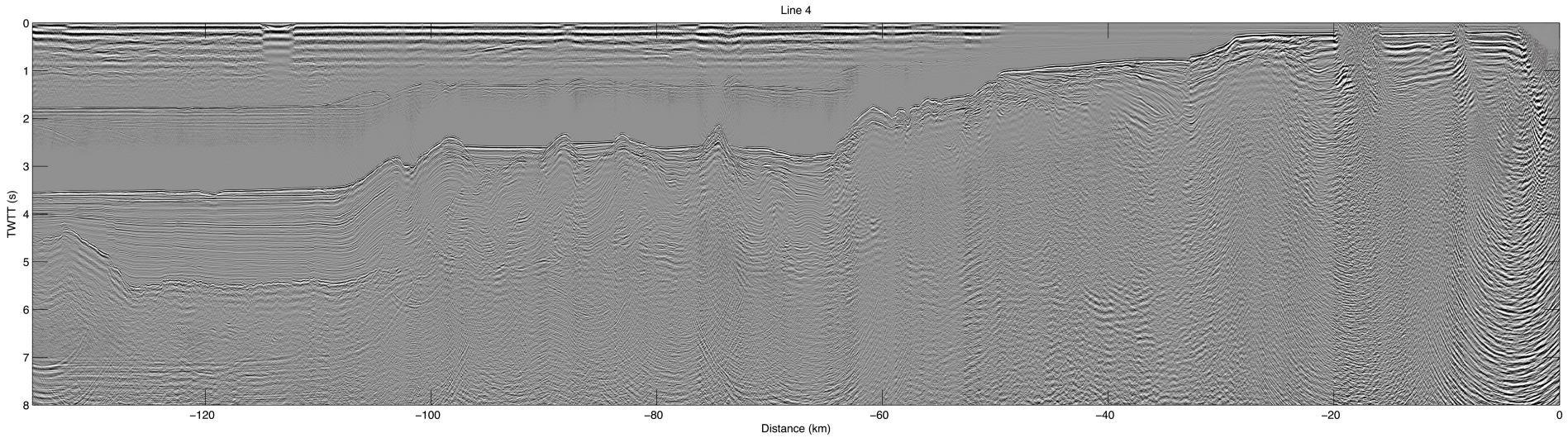
- Goals
  - Get all participants involved in each step involved in processing seismic data
  - Basic processed migration of each line collected while on-board

Less of this:

More of this:

MGL 12-12 : Processing Success

- Accomplished both processing goals
  - All scientists had a few hours a day to process in shifts
  - All seismic lines were post-stack time migrated when we arrived in port.
- Two scientists came to U. Wyoming for continued processing



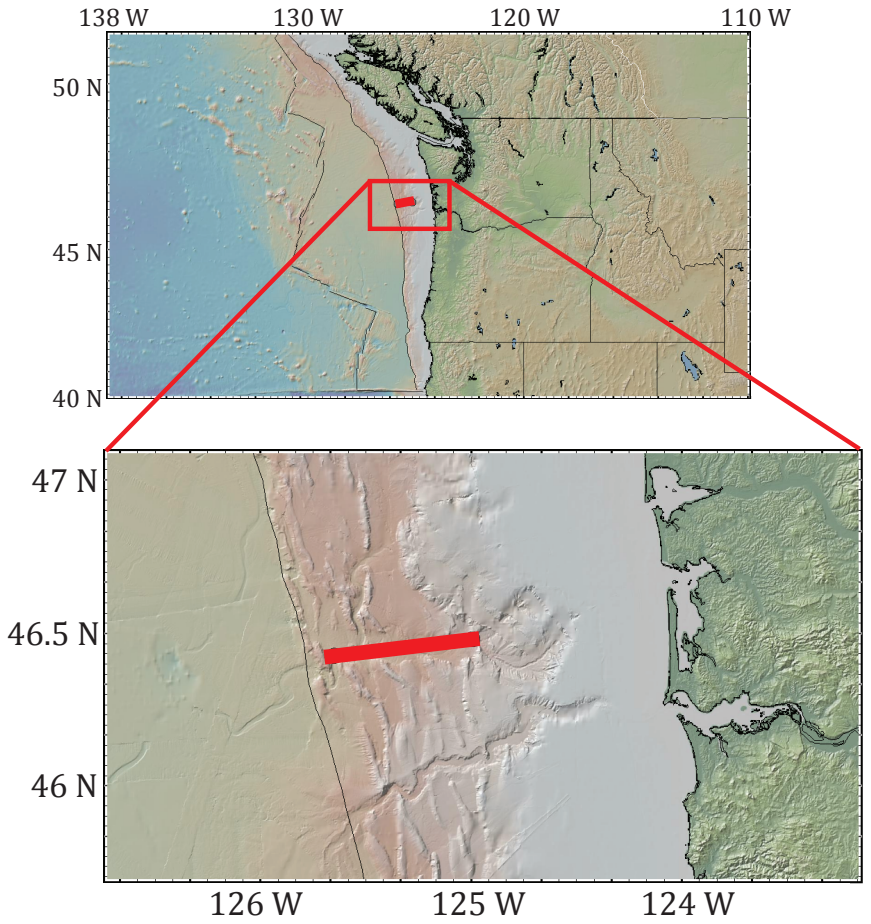
MGL 12-12 : For the Future

- Workstations
  - Ideally, create a “nook” of four workstations
    - Set higher goals than rough post-stack migrations
- All licenses hosted on proc1
  - proc2 ran some operations through proc1

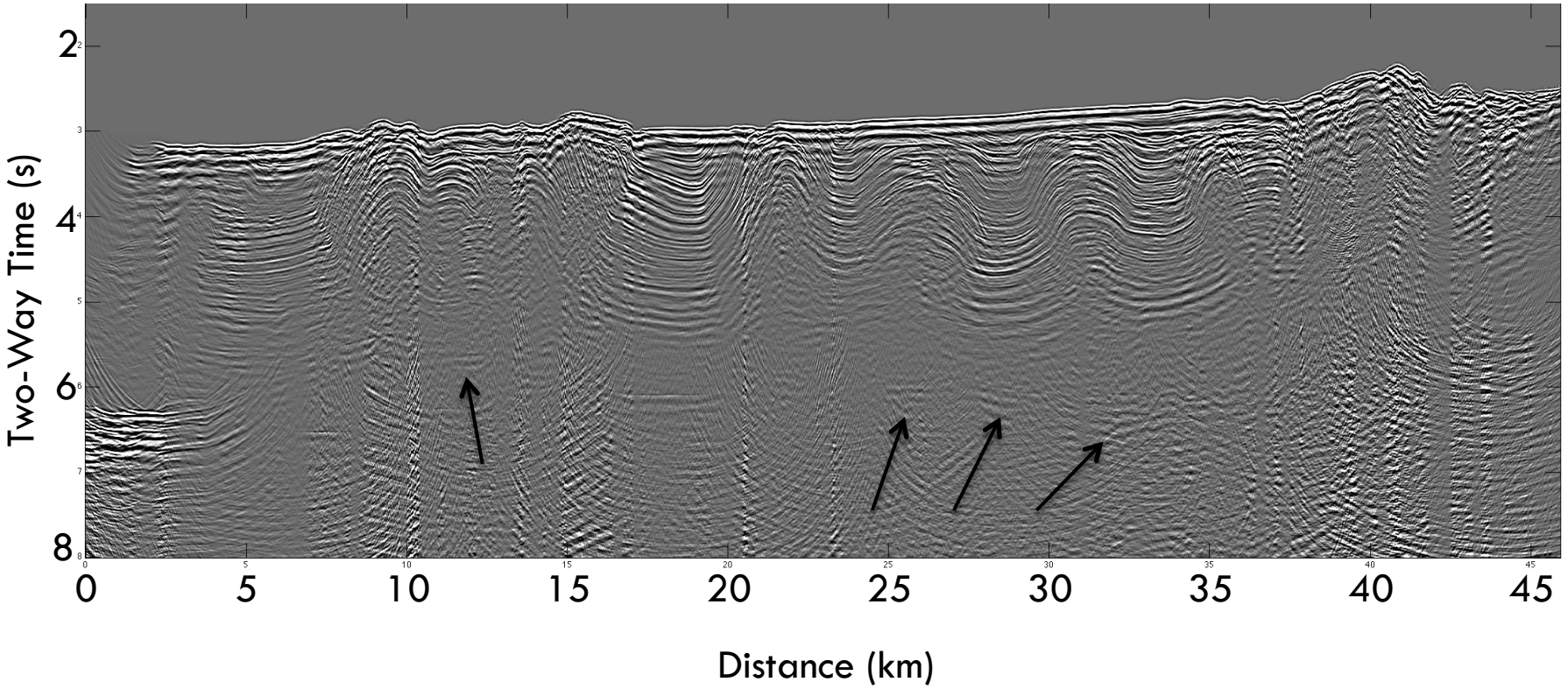
MGL 12-12 : Imaging Plate Boundary

- Shot a section of Line 9 four times

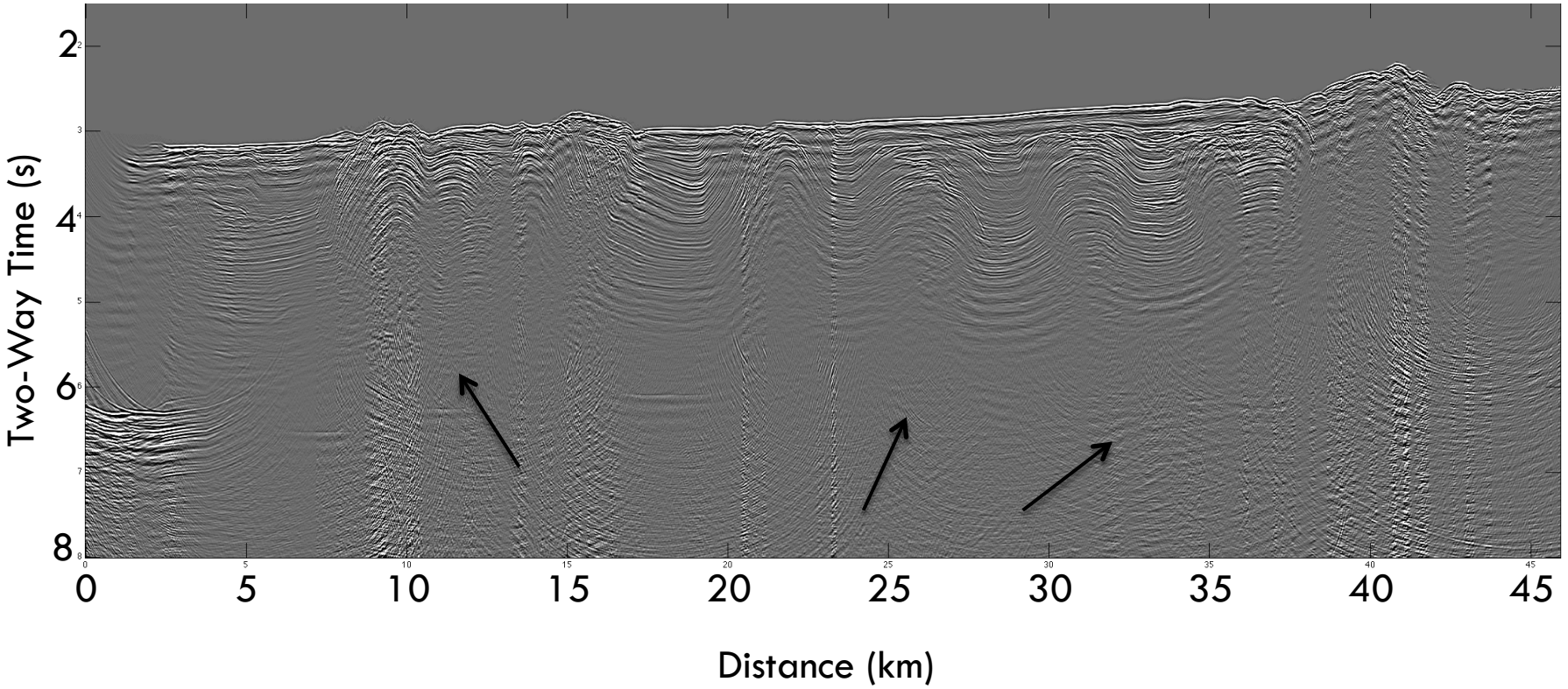
- Test to see imaging resolution with 4 source configurations
  - Line9 – 15m tow depth, 36 gun array
  - Line9a – 9m tow depth, 36 gun array
  - Line9b – 9m tow depth, 18 gun array
  - Line9b – 15m tow depth, 18 gun array



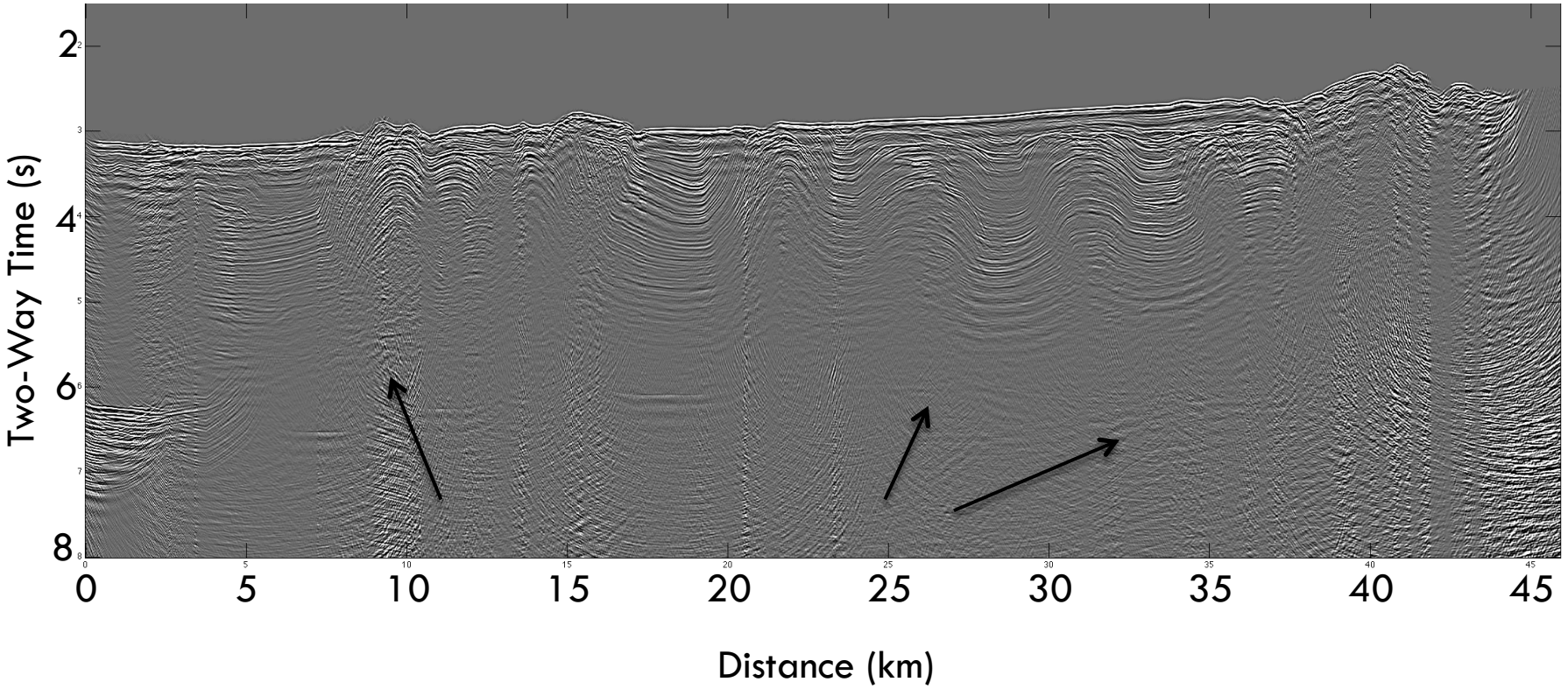
line9



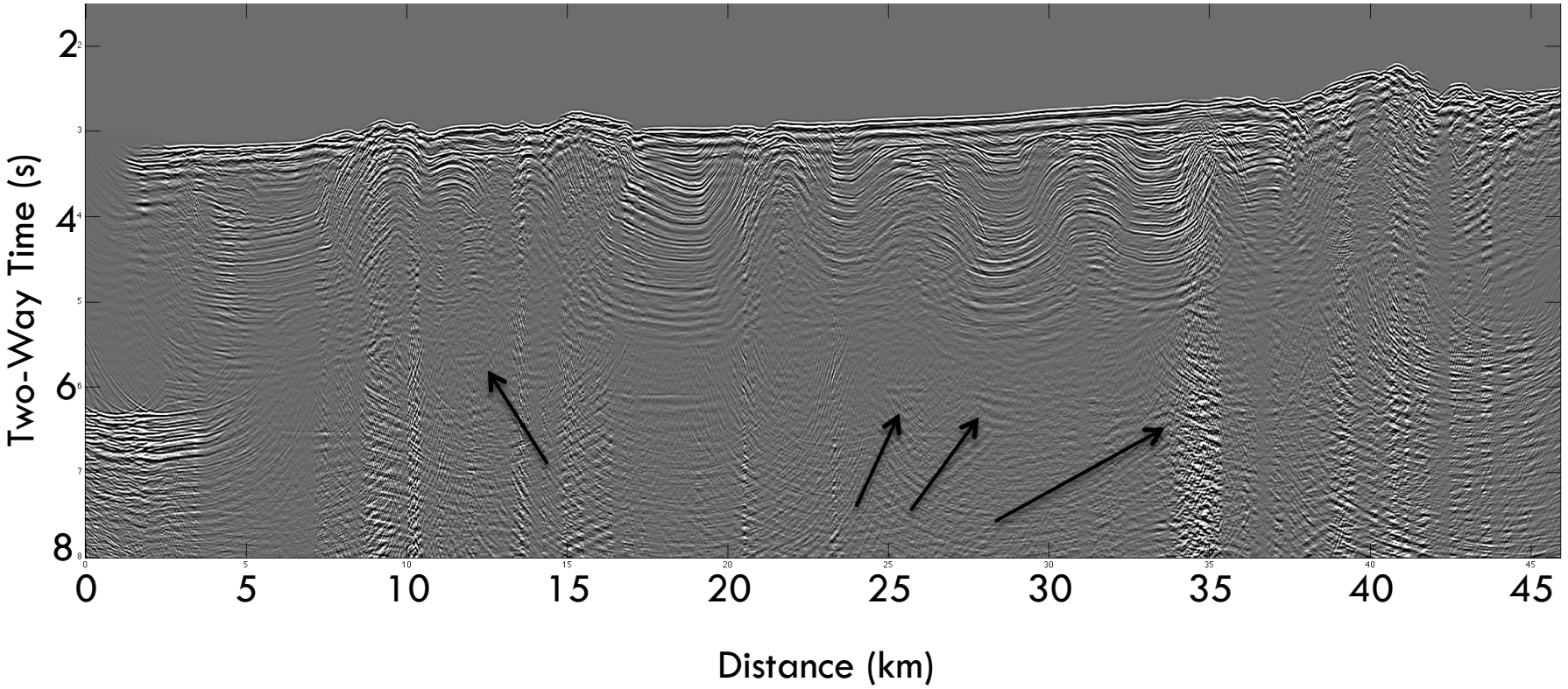
line9a



line9b



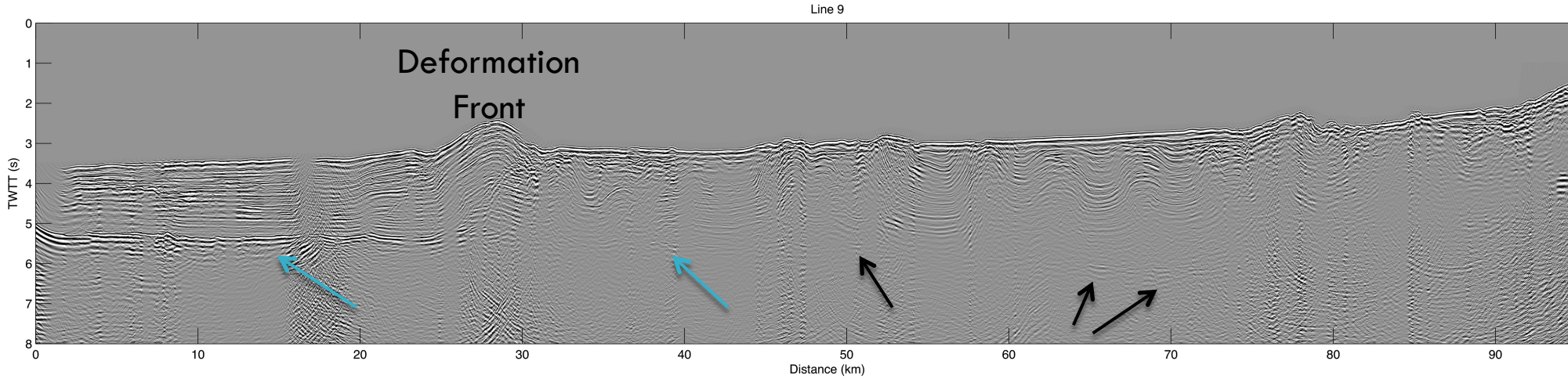
line9c



Discussion

- Low impedance contrast at the top of the subducting oceanic plate beneath the accretionary prism
- Plate boundary can be imaged in all tested source configurations
- The deeper source array returns a brighter, lower frequency signal from the plate boundary
  - The more shallow source has better resolution
- 2-D and 3-D surveys are both capable of imaging the subducting plate boundary

Looking Ahead



- Continue seismic data processing
  - Multiple suppression and depth migrations
- Investigate possible causes of impedance contrast change before and after deformation front