Summary from Particle Physicist's Point of View

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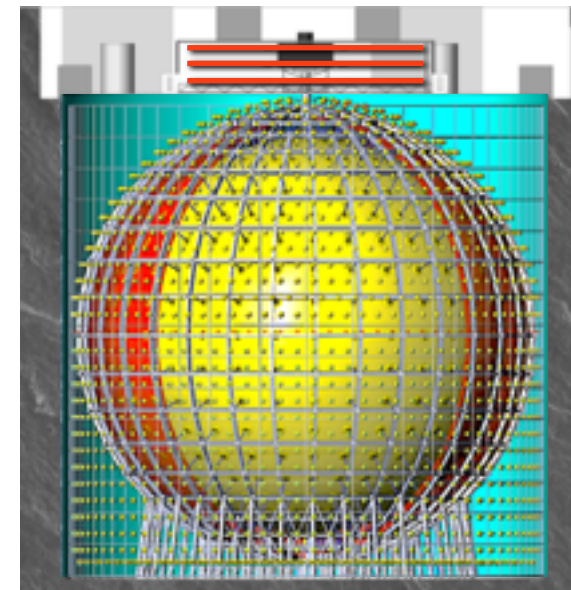
Beijing

23/7/2017

Covered by Ran and Zhe
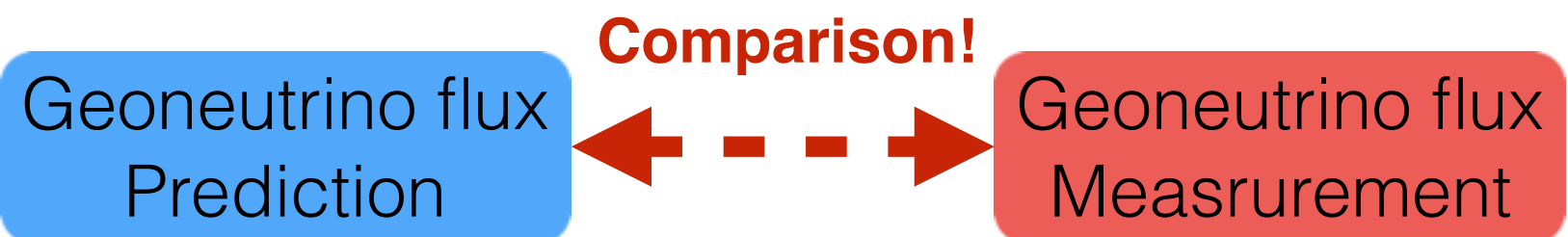

Geoneutrino flux
Measrurement

Your Work

Geoneutrino flux Prediction

Geoneutrino flux Measrurement

Comparison!

Geoneutrino flux Prediction ◀ ‑ ‑ ‑ ▶ Geoneutrino flux Measrurement

3D Emission Model

Our ultimate goal
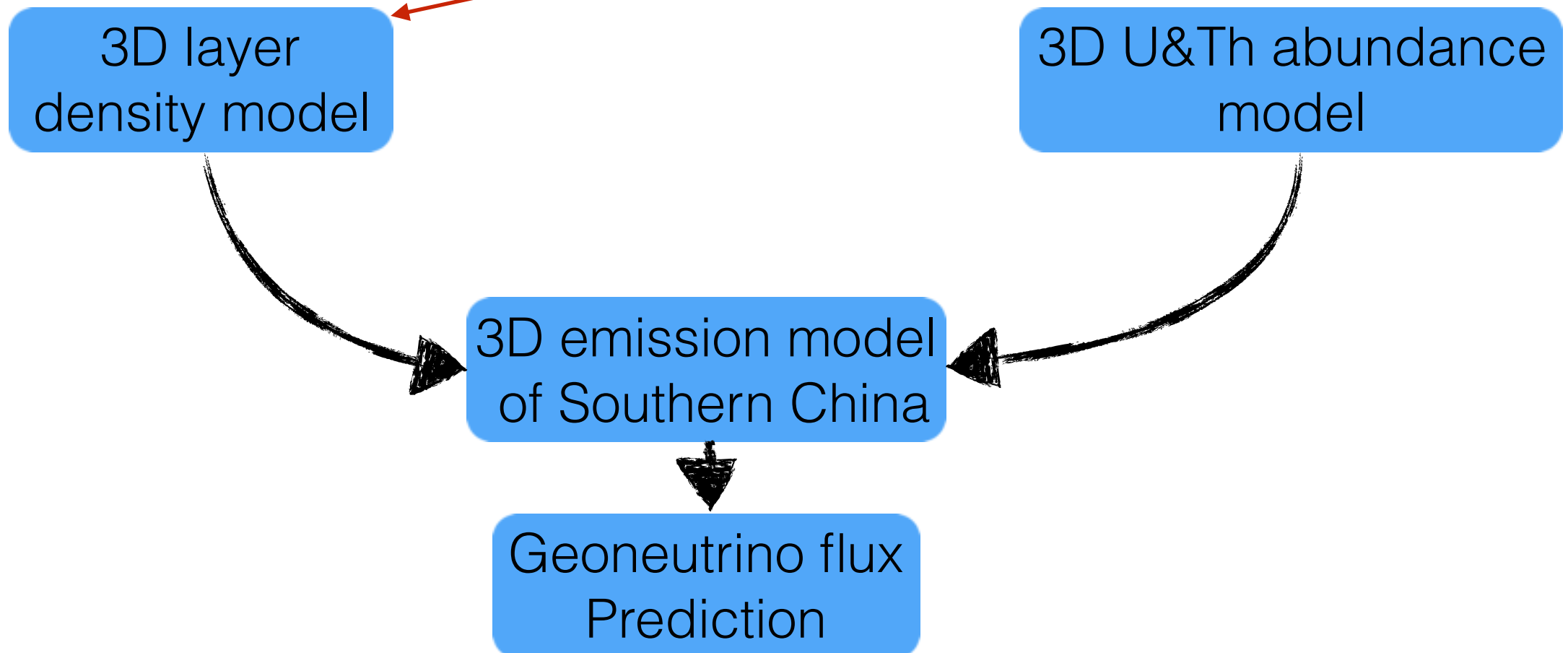
3D emission model
of Southern China

Geoneutrino flux
Prediction

Model Ingredients

$$\frac{d\phi(\vec{r}, E)}{dE} = n(E) \int \frac{P(E, |\vec{r} - \vec{r}'|)}{4\pi|\vec{r} - \vec{r}'|^2} \frac{X N_A}{\tau A_r} f_m(\vec{r}') \rho(\vec{r}') d\vec{r}'$$

3D layer density model

3D U&Th abundance model

3D emission model of Southern China

Geoneutrino flux Prediction
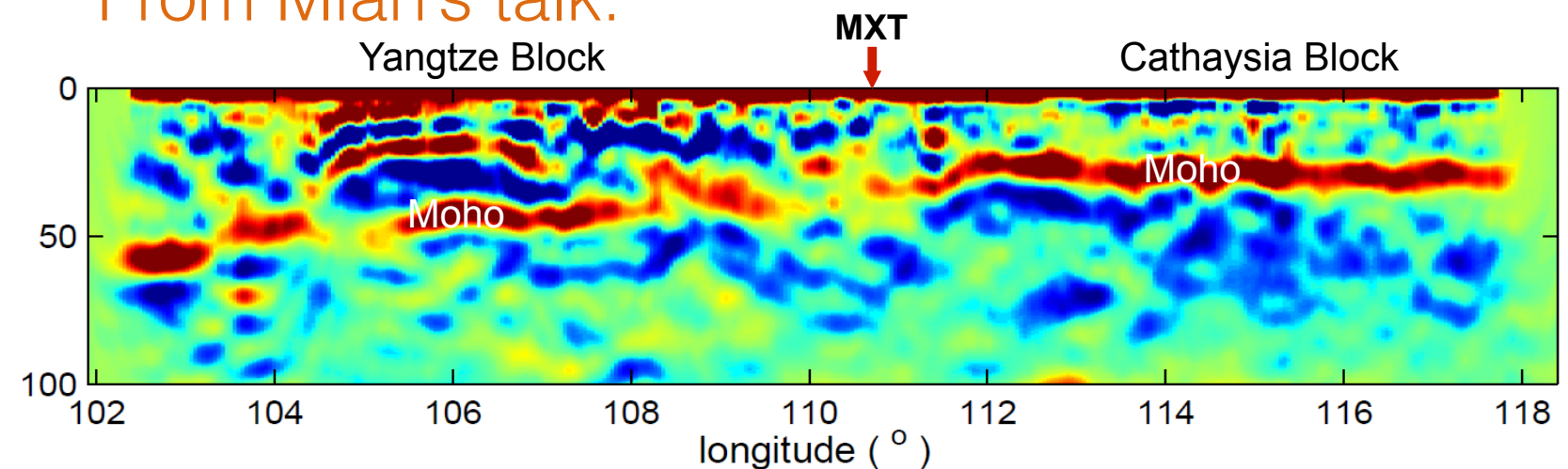
3D Layer Model

3D layer
density model

Seismic Data Input (1)

Seismic data — Covered by several speakers

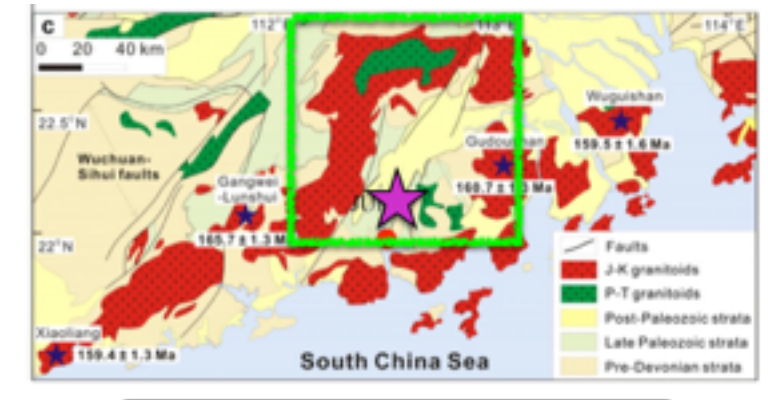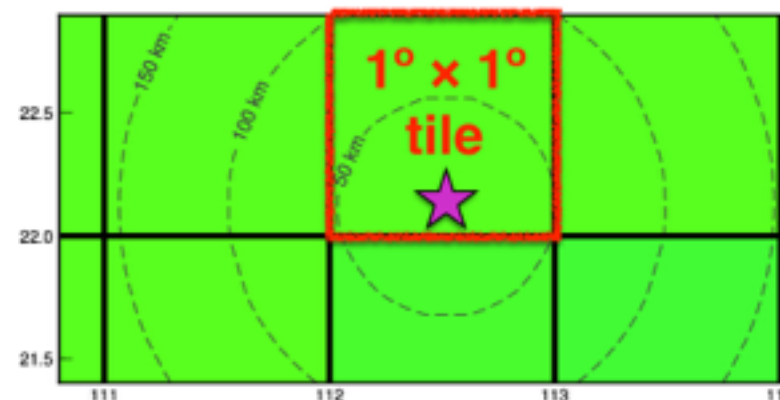3D layer density model

From Mian's talk:

From Liang's talk:

Grids:
0.5° × 0.5 ° :~ 55 km ×55 km

Resolution:
1° × 1° :~ 110 km ×110 km

From Ondřej's talk:

Gravity Measurements

Seismic data

Gravity anomaly data

Covered by Zhiwei

3D layer density model
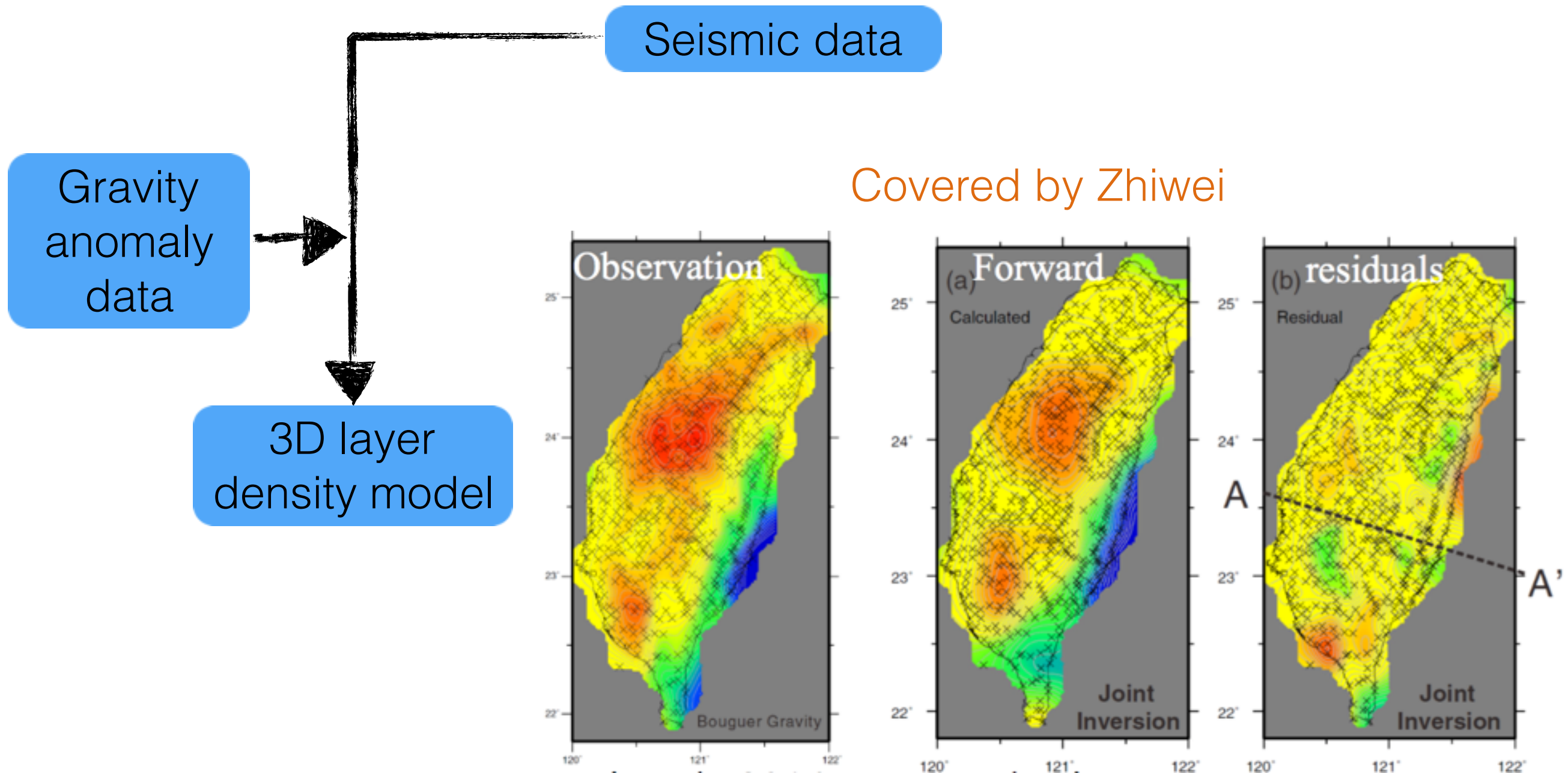
Cross-check with Boreholes (1)
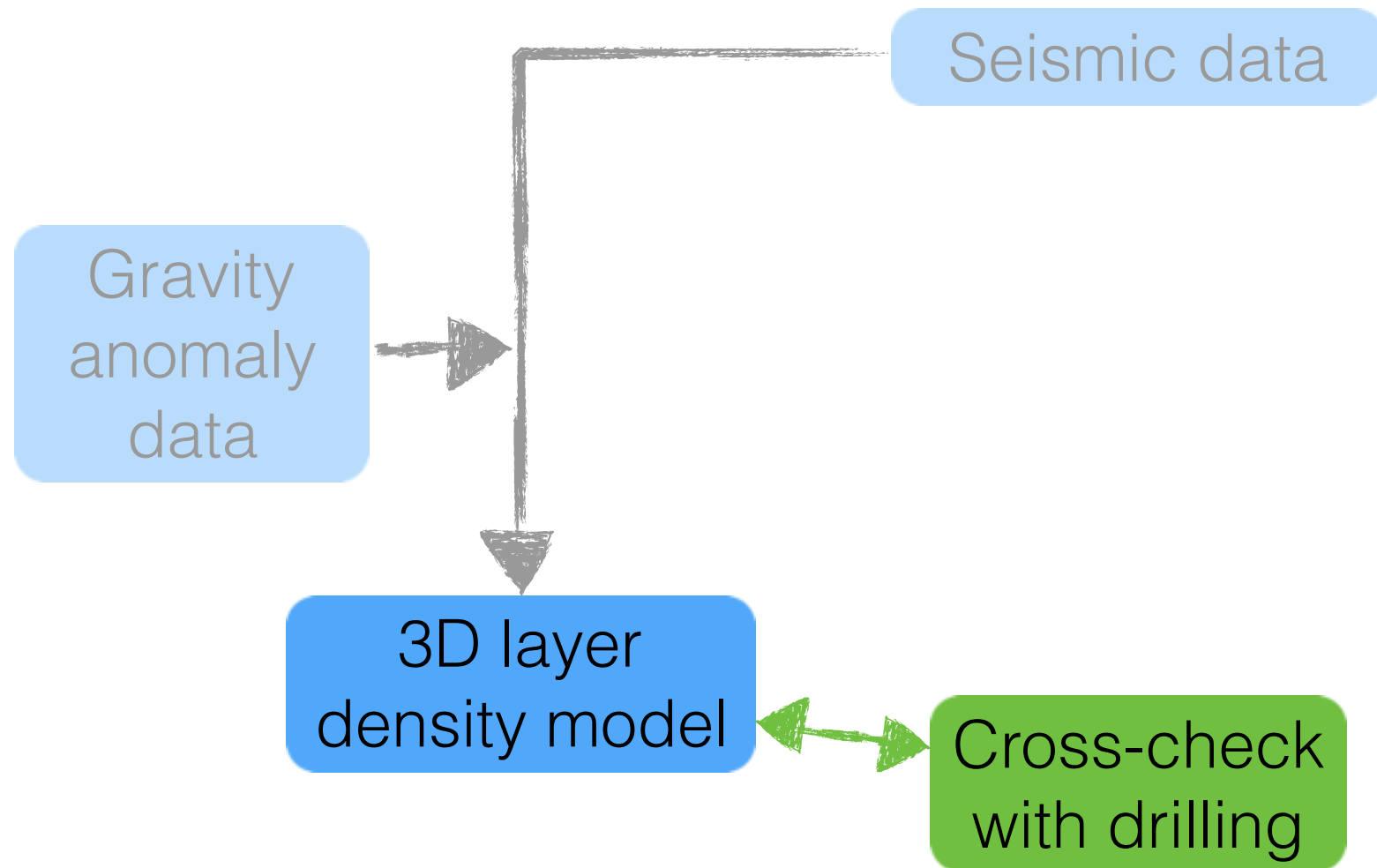
Cross-check with Evolution

Seismic data

Covered by several speakers

Gravity anomaly data

4D layer density model (Evolution)

3D layer density model

Cross-check with drilling
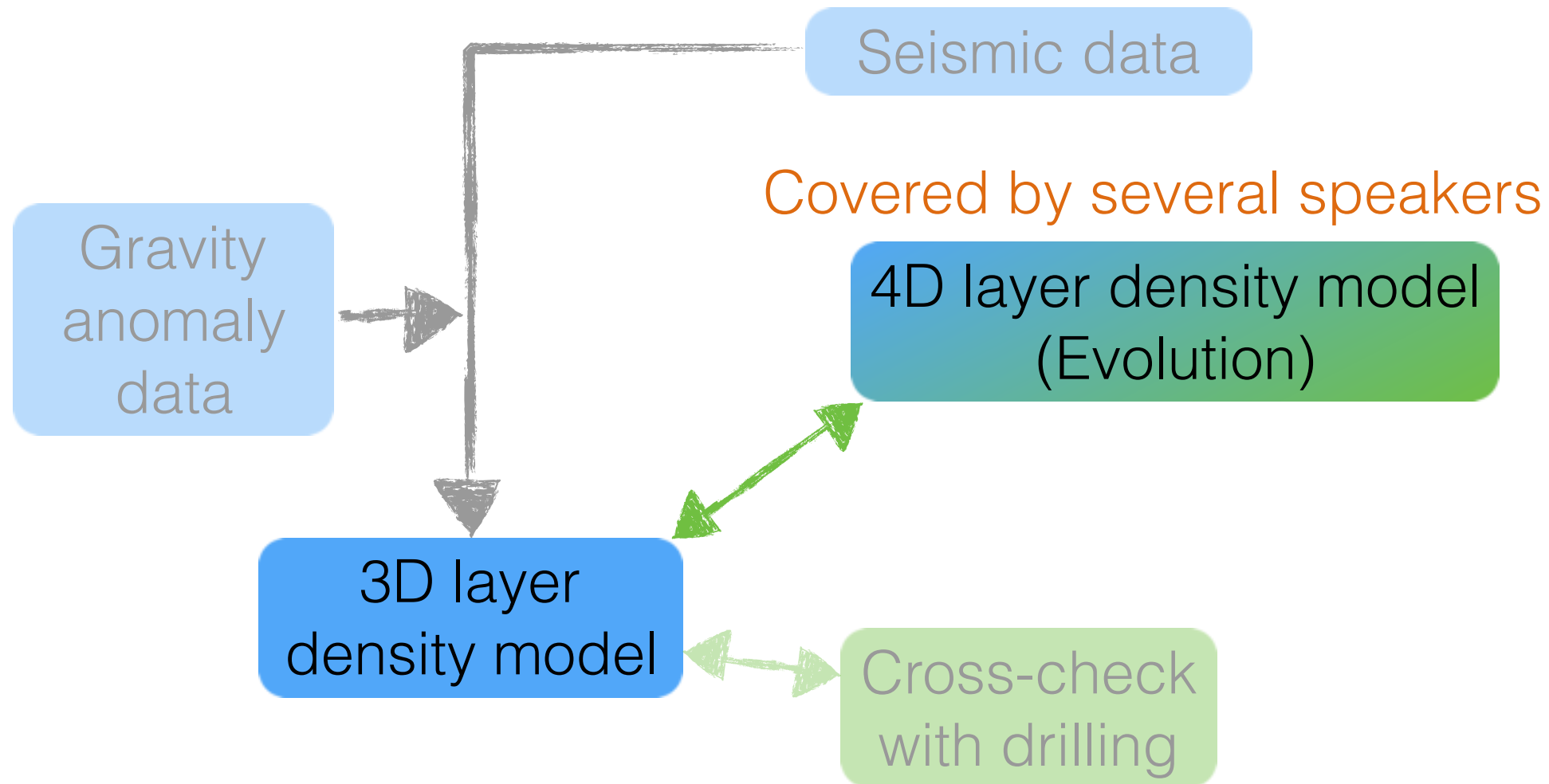
Input from Evolution
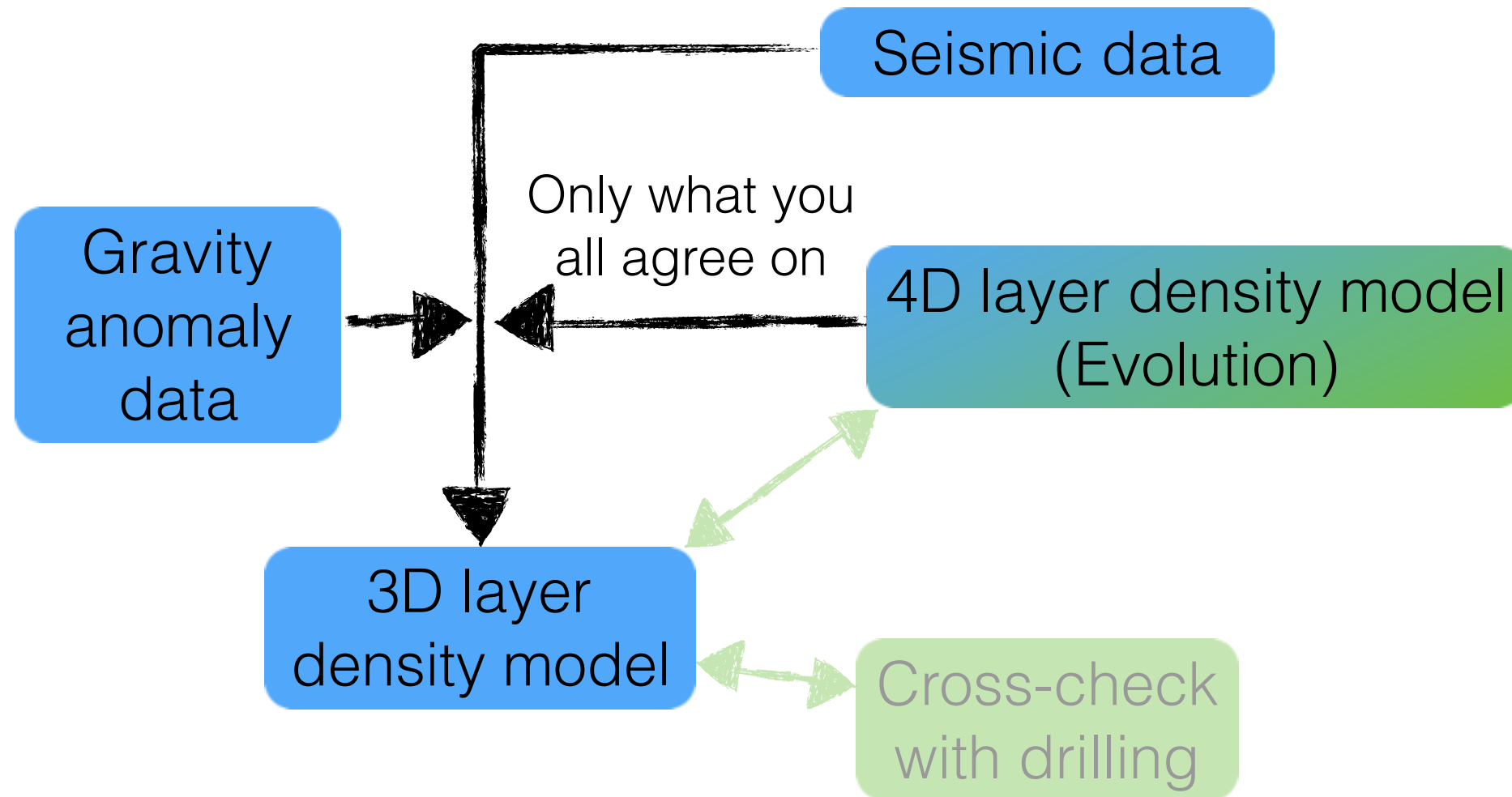
3D Uranium and Thorium Model

3D U&Th abundance model

Derrick's talk
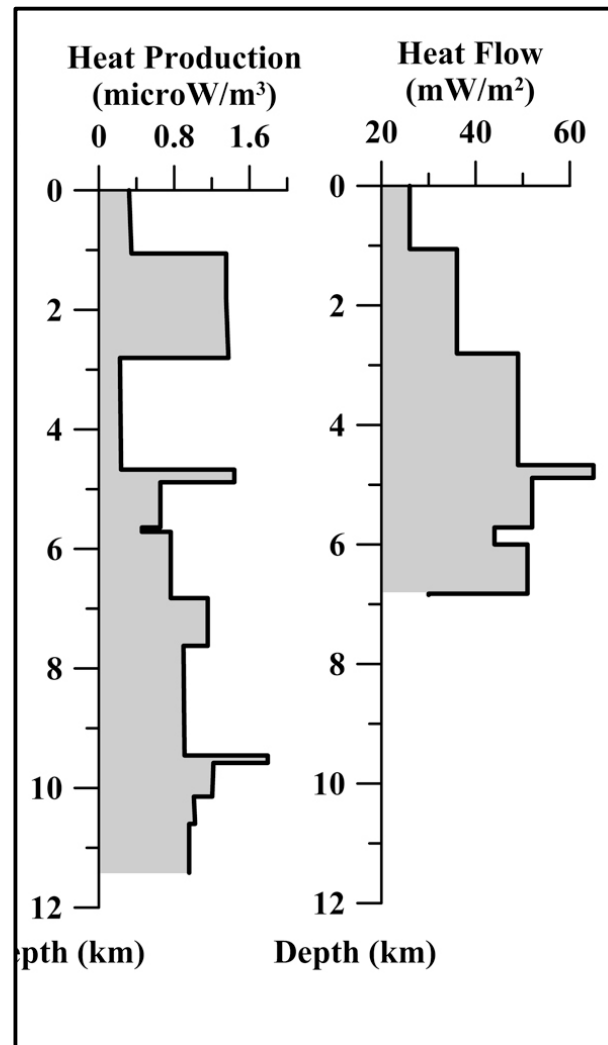
Seismic data

Sample collection

3D U&Th abundance model

continental
oceanic

(a) plutonic

UC
MC
LC

calibrated range

Heat Production [μW m⁻³]

(b) plutonic

N continental

Estimated P-Velocity [km s⁻¹]

Hasterok & Webb (2017)

Seismic data

Sample collection

Irina's talk

Heat Production (microW/m³)

Heat Flow (mW/m²)

3D U&Th abundance model

Cross-check with drilling

Anything else?

Seismic data

Only what you all agree on

Gravity anomaly data

4D layer density model (Evolution)

Sample collection

3D layer density model

Cross-check with drilling

3D U&Th abundance model

Covered by several speakers

3D emission model of Southern China
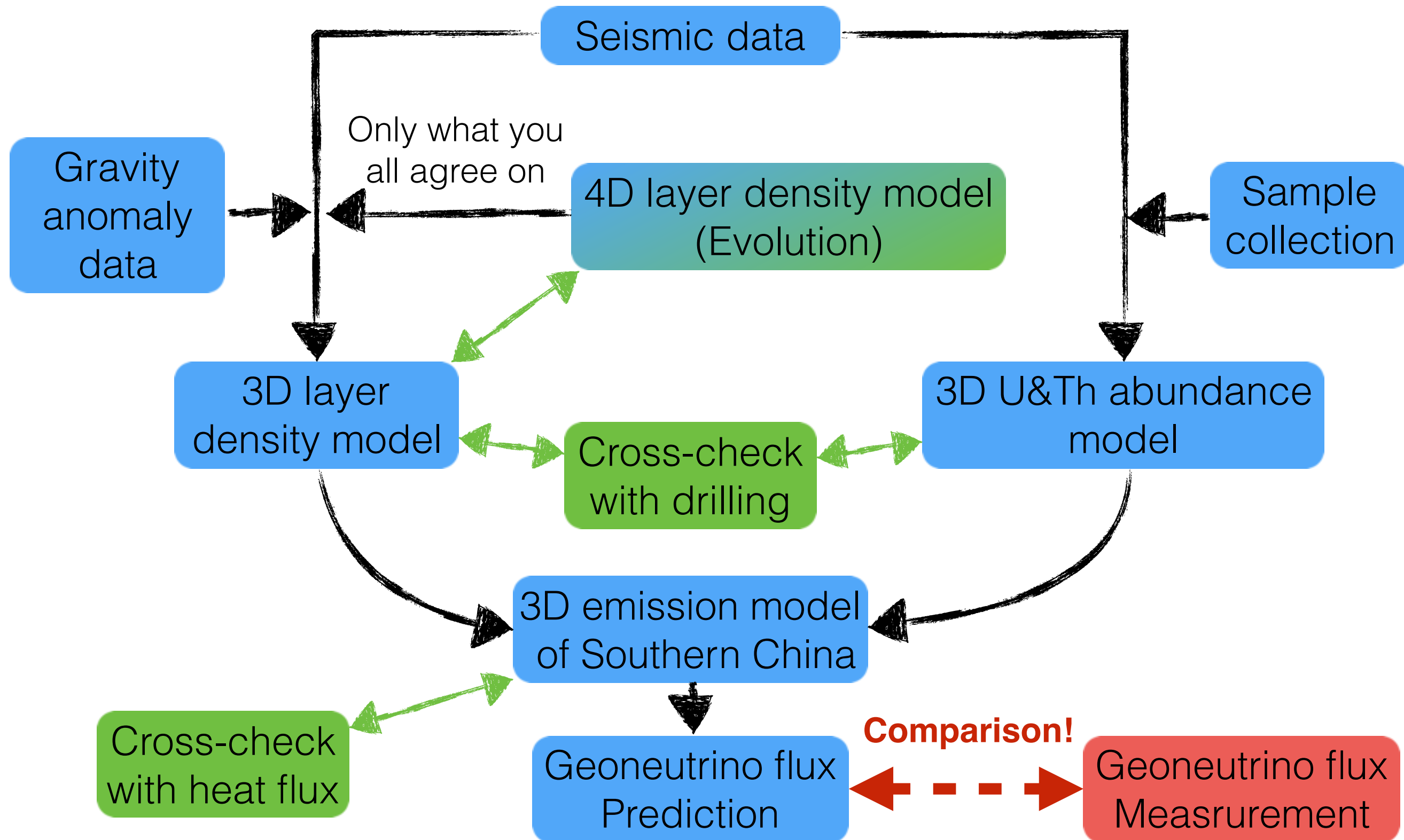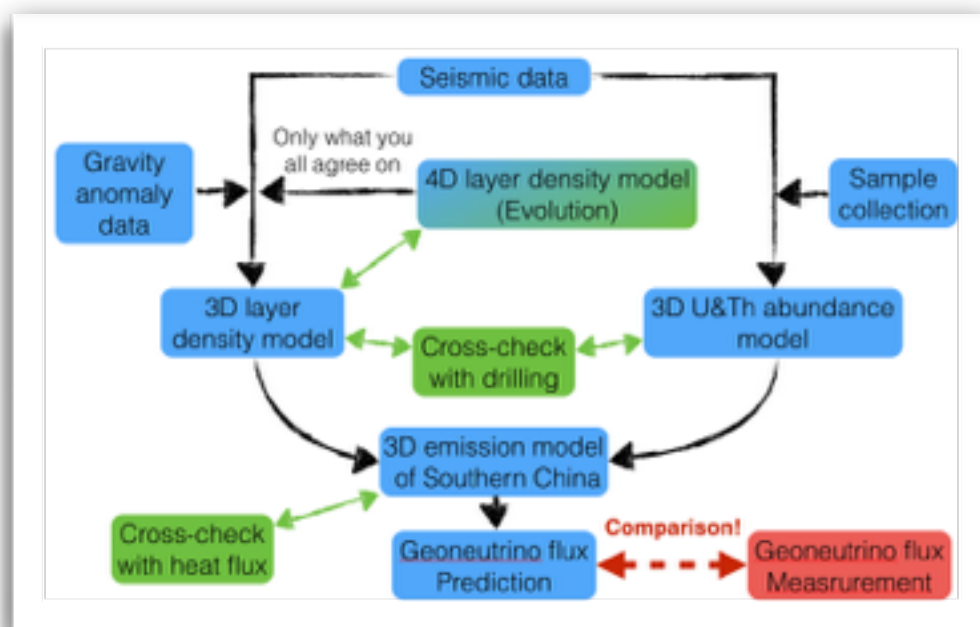
Cross-check with heat flux

Geoneutrino flux Prediction

Complete Picture

- We have an idea how to proceed to achieve our ultimate goal: Build 4D (emission) model of Souther China

- You can all benefit both from the **journey** and from the **result**

1. Each box and line hide the potential for many papers -> We can satisfy the system

2. Each step needs input from the previous steps - requires publicly sharing of the data and method/code (follow Sabin's example)

3. Coordinators of global effort needed - keep on doing this meeting

4. The final result can be used for further studies and shows the way to go for other regions -> More knowledge & more papers

Final Words

- We have an idea how to proceed to achieve our ultimate goal: Build 4D (emission) model of Souther China

- You can all benefit both from the **journey** and from the **result**

Thank you all for very nice presentations and stimulating discussion