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# Transparent modeling of the gravity anomalies

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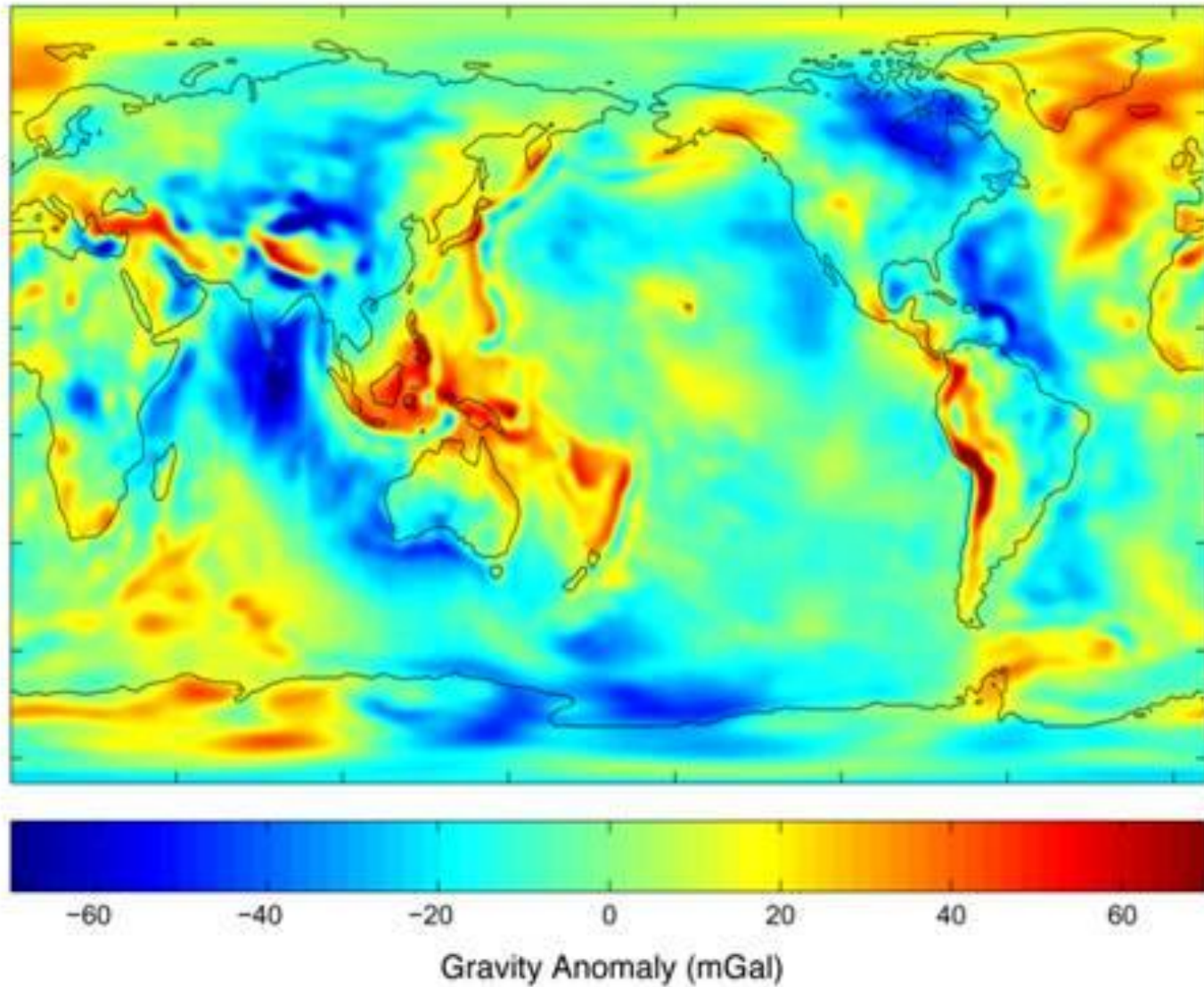
Yekaterinburg  
2015



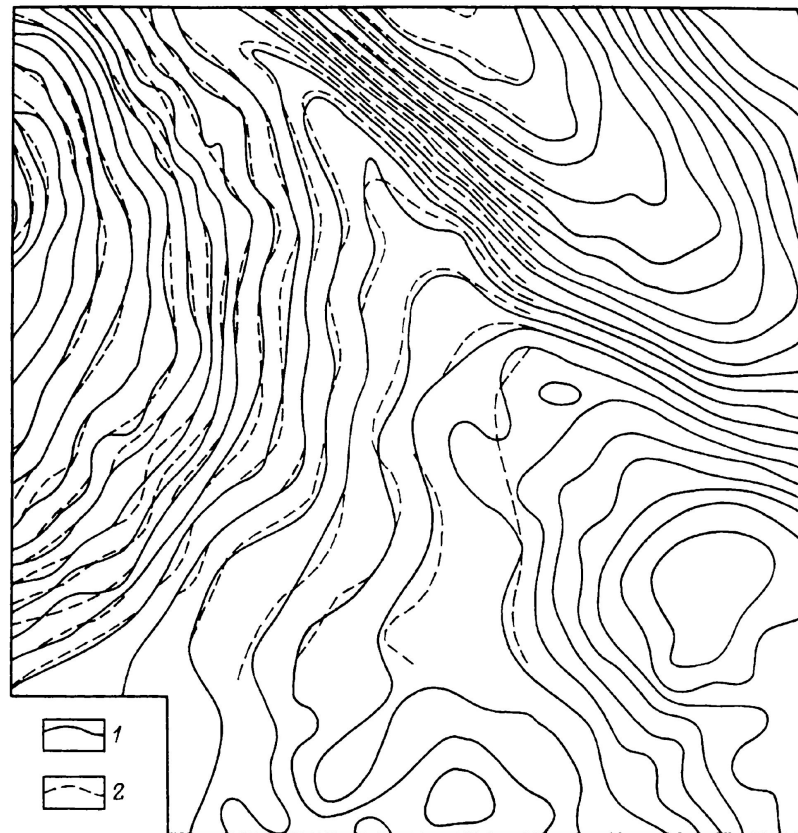
# Geophysics

- Physics
- Geodesy
- Computer science

# The modeling of the gravity anomalies

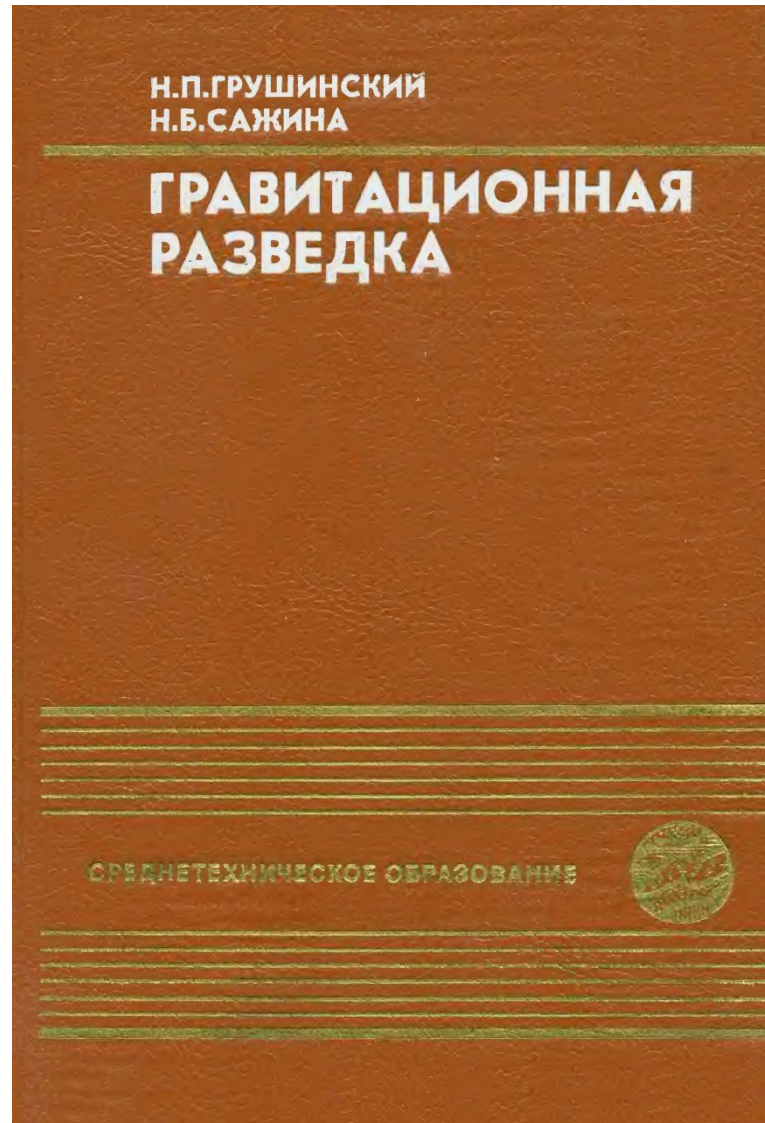


# The direct problem in gravity prospecting



**Рис. 121.** Сравнение гравиметрических карт мелкого масштаба, построенных с помощью ЭВМ и ручным способом:  
изолинии: 1 – при машинной интерполяции, 2 – при ручной интерполяции

# The literature available on this subject



# The resulted mathematical model of the subject of this research

$$x := 0,50..1200$$

Ustup

$$\underline{H1} := 250 \quad h1 := 75 \quad d1 := 700 \quad \sigma1 := 0.15$$

$$g1(x) := G \cdot \sigma1 \cdot \left[ \pi \cdot (H1 - h1) + 2 \cdot H1 \cdot \operatorname{atan} \left[ \frac{(x - d1)}{H1} \right] - 2 \cdot h1 \cdot \operatorname{atan} \left[ \frac{(x - d1)}{h1} \right] + (x - d1) \cdot \ln \left[ \frac{[(x - d1)^2 + H1^2]}{(x - d1)^2 + (h1)^2} \right] \right]$$

Shar1

$$R2 := 100 \quad h2 := 375 \quad d2 := 400 \quad \sigma2 := 0.6$$

$$g2(x) := G \cdot \sigma2 \cdot \frac{4 \cdot \pi \cdot R2^3}{3} \cdot \frac{h2}{\sqrt{[(x - d2)^2 + (h2)^2]}^3}$$

Shar2

$$R3 := 75 \quad h3 := 200 \quad d3 := 800 \quad \sigma3 := 0.6$$

$$g3(x) := G \cdot \sigma3 \cdot \frac{4 \cdot \pi \cdot R3^3}{3} \cdot \frac{h3}{\sqrt{[(x - d3)^2 + (h3)^2]}^3}$$

$$\underline{g(x)} := g1(x) + g2(x) + g3(x)$$

# The final form of the program product

