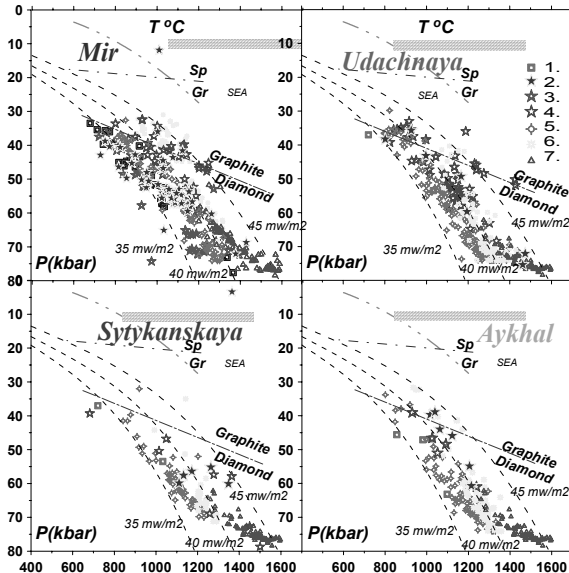


## Diamond inclusions and eclogites thermobarometry, Siberia

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Monomineral thermobarometry [1] of diamond inclusions [2] reveal TP conditions for peridotitic Opx, Gar, Cpx refer to ~35mw/m<sup>2</sup> and layering. Heated TP for Gar and Chr at P>60 kbar corresponds to dunites (melt/fluid conduits) forming convective branch. Cr-Cpx reveal broad range near Diamond-Graphite boundary to 40-45 mw/m<sup>2</sup> at 50 -55 kbars and trace convective branch lower. Omphacite inclusions reflect subduction gradients. Diamond eclogites [3, 4] are heated to 40-45 mw/m<sup>2</sup> probably influenced by protokimberlites. In mantle beneath Mir and Udachnaya peridotitic inclusions reveal sharp mantle layering. In Alakite mantle many of peridotitic inclusions correspond to heated by protokimberlites base of lithosphere. RFBR 06-05-65021-a.



**Figure 1:** TP diagram. 1. Opx; 2. Cr-Cpx; 3. Omphacite (DI); 4. Cpx eclogites (T-Krogh,1988); 5.Gar; 6.Gar-Pxt; 7.Chr (DI).

[1] Ashchepkov I.V., Pokhilenko N.P. & Vladykin N.V. *et al.* (2008) *Geol. Soc. London SP* **293**, 335-352. [2] Logvinova A.M., Taylor L.A., Floss C. & Sobolev N.V. (2005) *Int. Geol. Rev.* **47**, 1223-1233. [3] Sobolev *et al.* (1994) *Int. Geol. Rev.* **36**, 42-64. [4] Snyder G.A., Taylor L.A. & Crozaz G. (1997) *J.Petr.* **38**, 85-113.

## Black carbon and sorption of PAHs in natural fire-impacted sediments form Oriole Lake (CA)

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We investigated the occurrence of black carbon (BC) and polycyclic aromatic hydrocarbons (PAHs) in sediment samples from Oriole Lake (Kings Canyon and Sequoia National Park, California). Sequoia National Park provided a unique environment for this study, as its frequent natural fires are recorded in the giant Sequoias. From the tree record the fire record for the past ~ 500 years is known [1]. Having this fire record provides a unique opportunity to reference the sediment layers to a known fire chronology.

Ca. 4 m of sediment covering the last 5,000 years were taken in July 2007 at Oriole Lake. Cores were sliced into 1 cm increments, and analyzed for <sup>210</sup>Pb, <sup>137</sup>Cs and <sup>14</sup>C for dating. Samples were extracted for PAH and analyzed for organic C and BC, according to a method by Gustafsson *et al.* [2].

Highest BC concentrations (> 1% d.w.) in the last century correlated with individual forest fire events in the region. Long-range transport of traffic emissions might have contributed to a gently rising baseline of sedimentary BC concentrations. PAH concentrations were only weakly correlated with BC concentrations. PAH ratios (e.g., methylphenanthrenes versus phenanthrenes) indicated a prevalence of pyrogenic emissions.

[1] Caprio (2004) *Association for Fire Ecology Misc. Publ. No. 2*, 107. [2] Gustafsson *et al.* (1997) *Environmental Science & Technology* **31**, 203.