



False-color image of the area around Noril'sk, April 9, 2006. In this band combination, bare land appears pale lavender (exposed barren rock in the hillside ridgeline running through the scene) to dark purple (landscape of Noril'sk and Talnakh). Brilliant greens show predominantly healthy Arctic tundra, riddled with characteristic deep blue small pothole lakes. The larger deep blues are rivers and lakes, including the large Lake Pyasino north of the city. Pale pink shows devegetated land, and the blue-white streams running from the city to the southeast (lower right) shows emissions from smoke stacks. The deep and pale pinks all downwind of the city, as well as the deep purple in the hillsides immediately outside Noril'sk, are moderately to severely damaged ecosystems. These include stressed tundra vegetation and denuded forests. Underground mines provide sulfide ores of copper and nickel which account for a sizeable fraction of Russia's entire national output of these metals. Sulfur dioxide emissions come from the city ore concentrators and smelters. (Data from the ETM+ instrument on the Landsat 7 satellite.)