Kamchatka – Pacific Coast

Overview

The Kamchatka Peninsula extends into the Pacific Ocean from northeast Asia and sits on the boarder between the Pacific Ocean and the Bering Sea. A significant continental shelf exists along portions of the peninsula's east coast. The region is influenced by the Kamchatka Current.

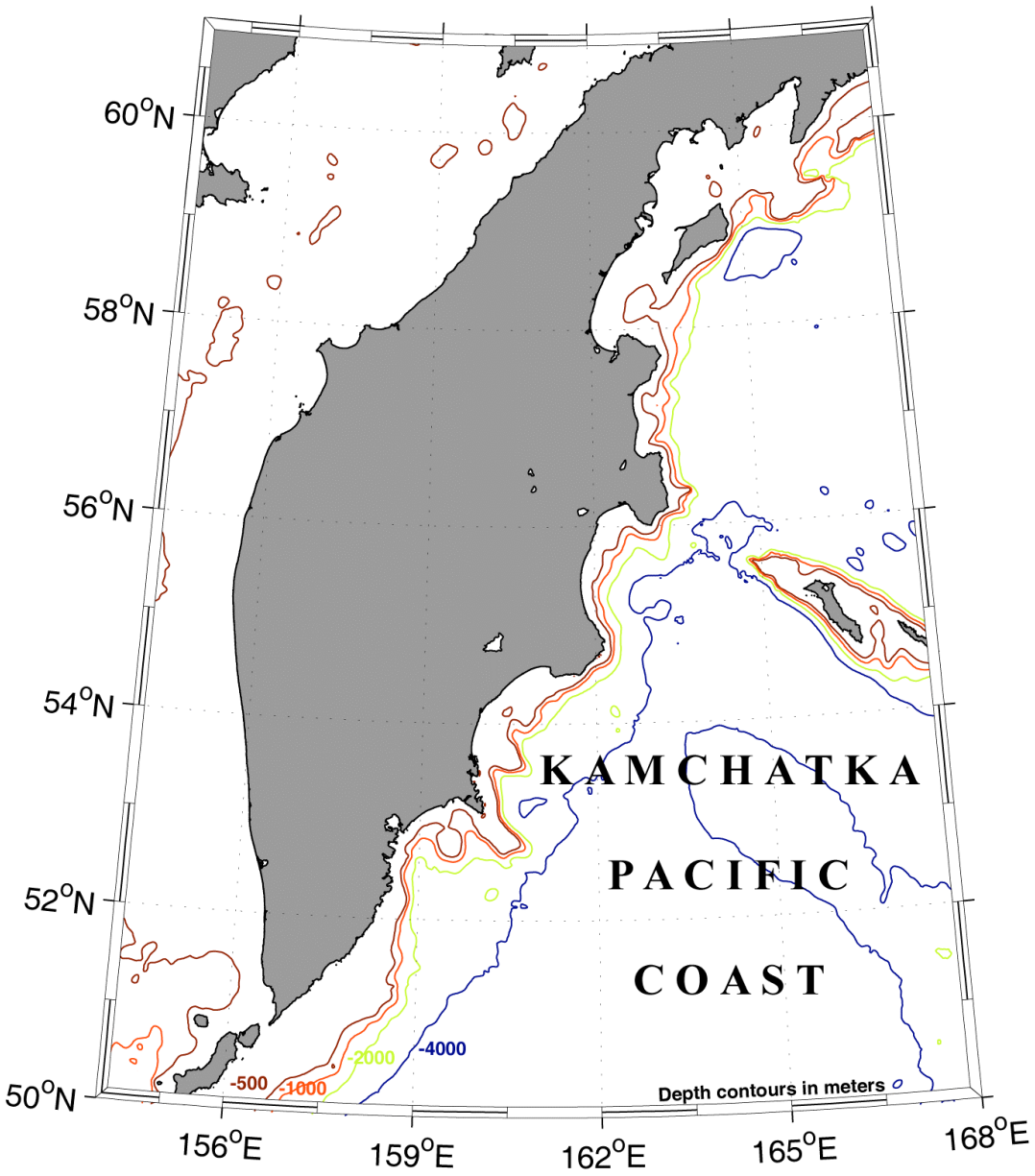

Figure 1. Bathymetry of the Pacific coast of Kamchatka. [Smith and Sandwell, 1997]

Observations

There has been some scientific study of internal waves along the Pacific coast of Kamchatka [Konyayev and Sabinin, 1998; Pao and He, 2002]. Satellite observations show the signature of fine scale waves with limited along crest lengths.

Table 1 shows the months of the year when internal wave observations have been made.

Table 1 - Months when internal waves have been observed off the Pacific coast of Kamchatka
(Numbers indicate unique dates in that month when waves have been noted)

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
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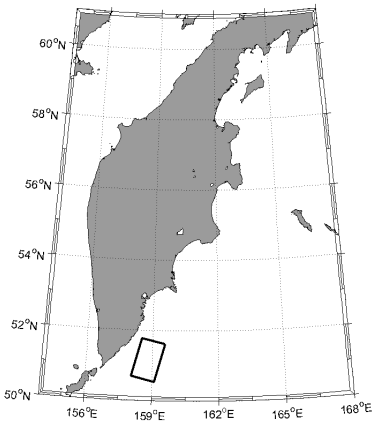
Konyayev and Sabinin [1998] report on hydrographic survey and measurements obtained with distributed line temperature sensors in the area of the Pacific continental slope of Kamchatka. The analysis of the data showed that over deep water, the tidal wave propagates from the shore, transforms, and decays into groups of soliton like internal waves, which form visible contrast stripes at the ocean surface, and decay, occasionally forming patches of temperature inversions in the thermocline.

Pao and He [2002] investigated large-amplitude internal waves propagating on the shelf of Pacific Coast of Kamchatka during one semidiurnal period. During this time two events of intense internal waves were observed. The most prominent event was a train of three depression waves with leading wave of 13-m height. The leading solitary wave had a so-called horizontal asymmetry, which had flattened forward face and steepened back. Solitary internal wave of similar characteristic but with smaller amplitude (5.5 m) was also recorded eight hours earlier.

References

Pao, H. P. and Q. He, 2002: Generation and Transformation of Intense Internal Waves on Shelves, Abstracts for COAA Scientific Workshop at the University of Maryland, Collage Park, July 13, 2002

Konyayev, K.V. and Sabinin, K.D., 1998; Intensive Internal Waves Near the Pacific Coast of Kamchatka, Oceanology no. 1, pp. 27-32



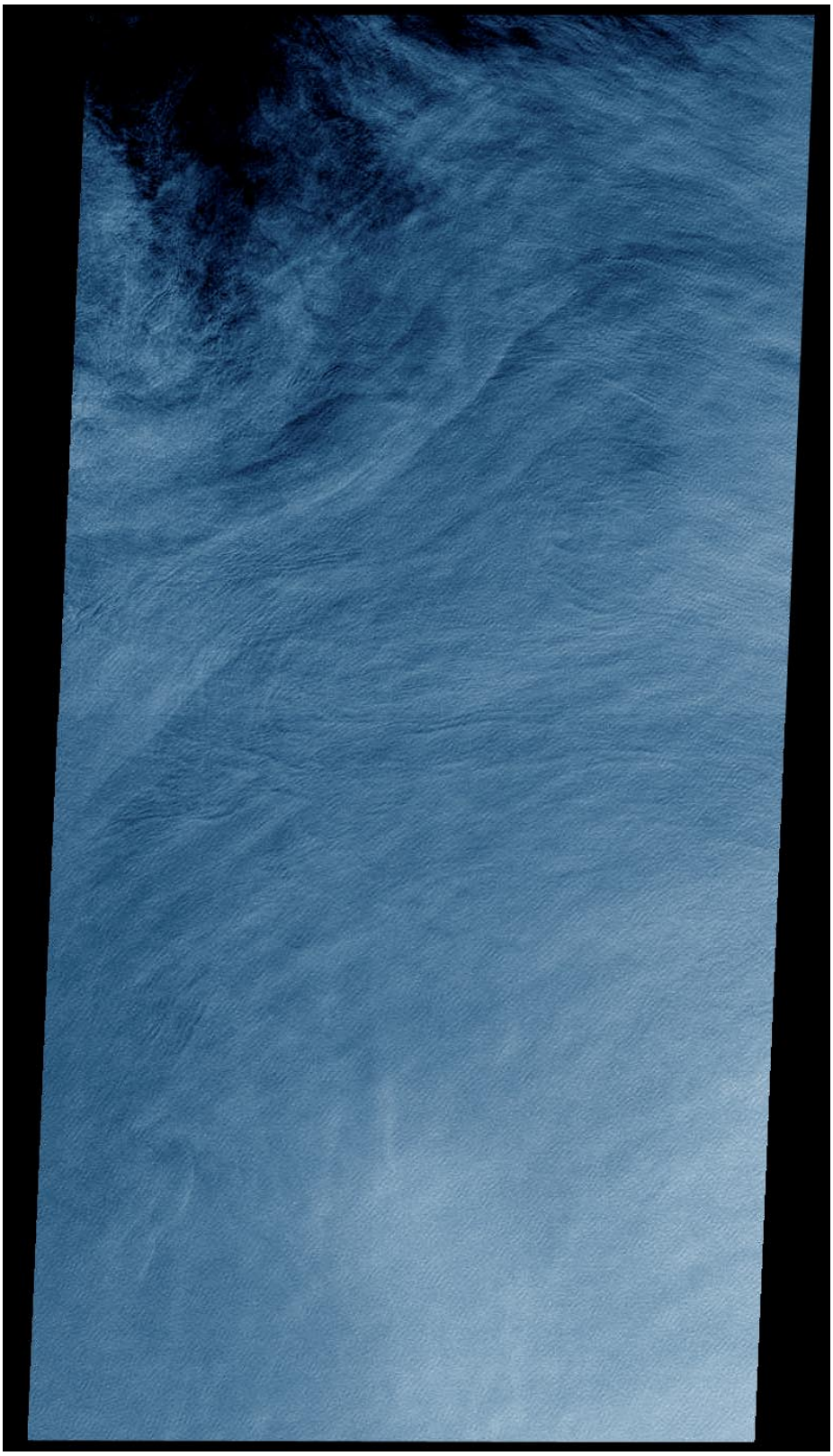


Figure 2. ASTER false color VNIR image near the southeast tip of Kamchatka acquired on 9 June 2000 at 0055 UTC. The image shows the signature of fine scale internal waves propagating southward. Imaged area is 60 km x 120 km.

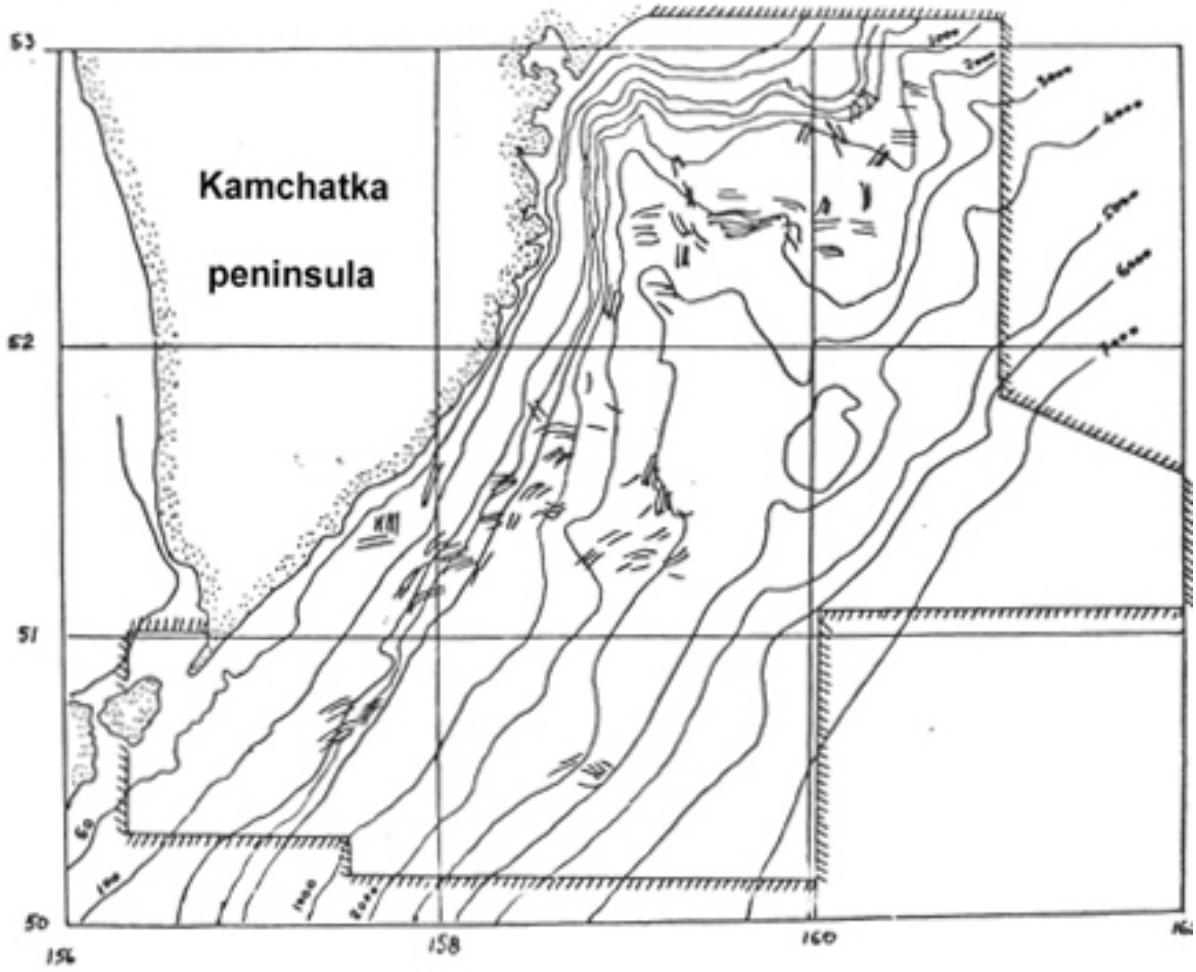


Figure 3. Map and line drawing interpretation of surface manifestations of internal wave packets in the northwest Pacific off the Kamchatka Peninsula. [Image from ADI'DAS Radar Image Preview Database. http://adidas.iki.rssi.ru]

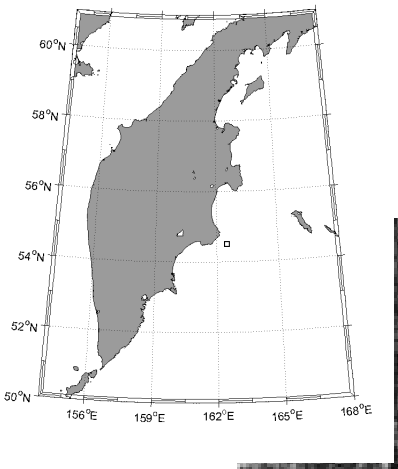
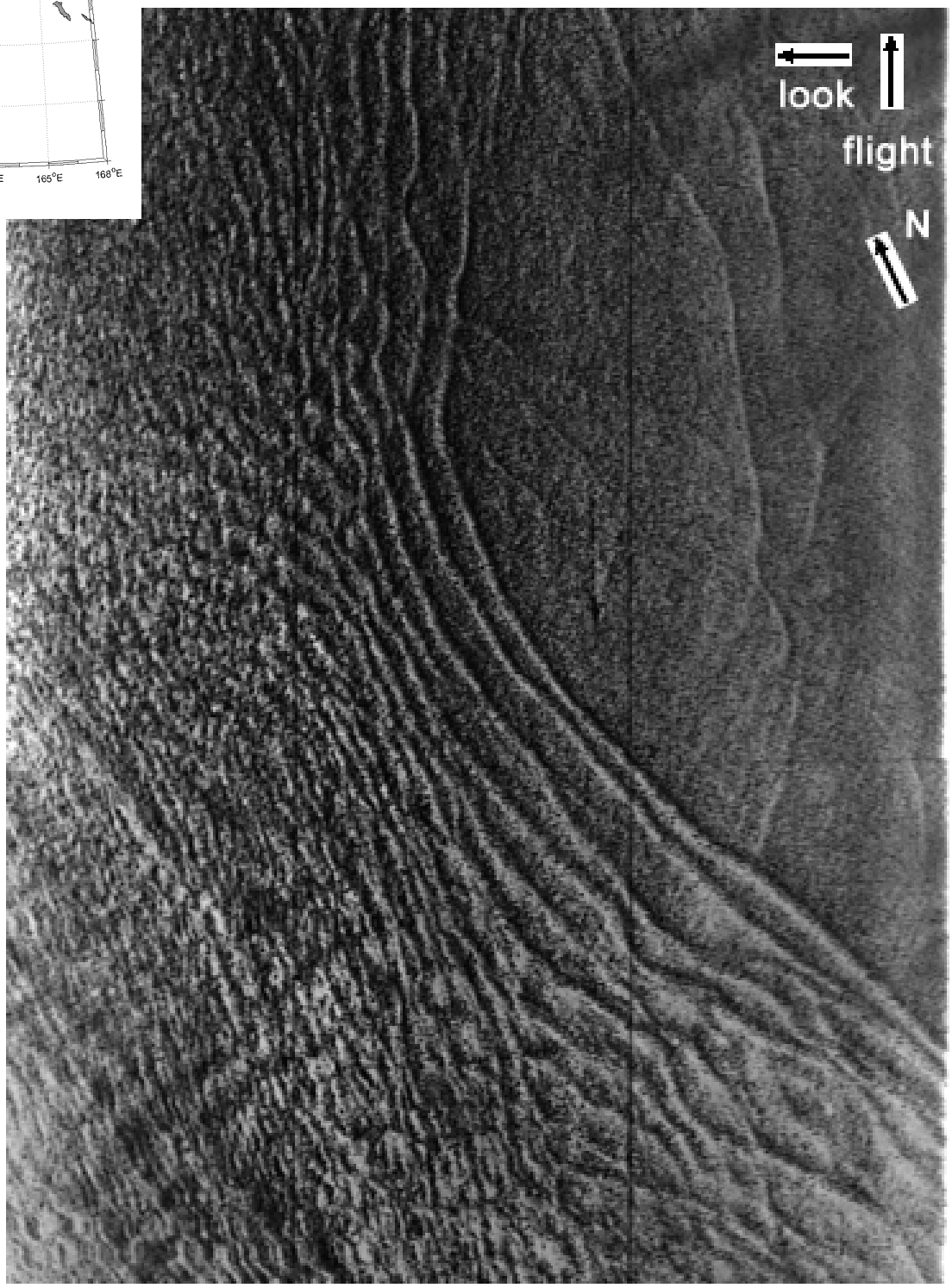
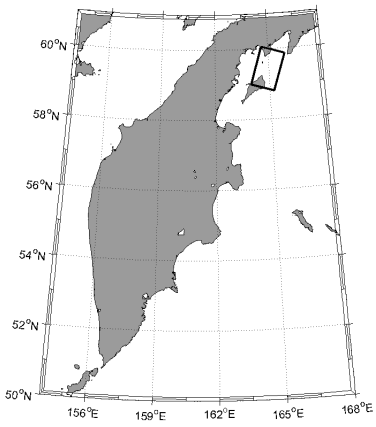


Figure 4. Ku-Band (13.6GHz HH) Real Aperture Radar image of internal waves acquired from Russian aircraft (altitude 2.15 km) on 25 August 1983 at 0407 local time. The image was taken off the east coast of Kamchatka near 54.5°N, 162.5°E. Imaged area is approximately 21 km x 16 km. [Image from ADI'DAS Radar Image Preview Database. http://adidas.iki.rssi.ru]





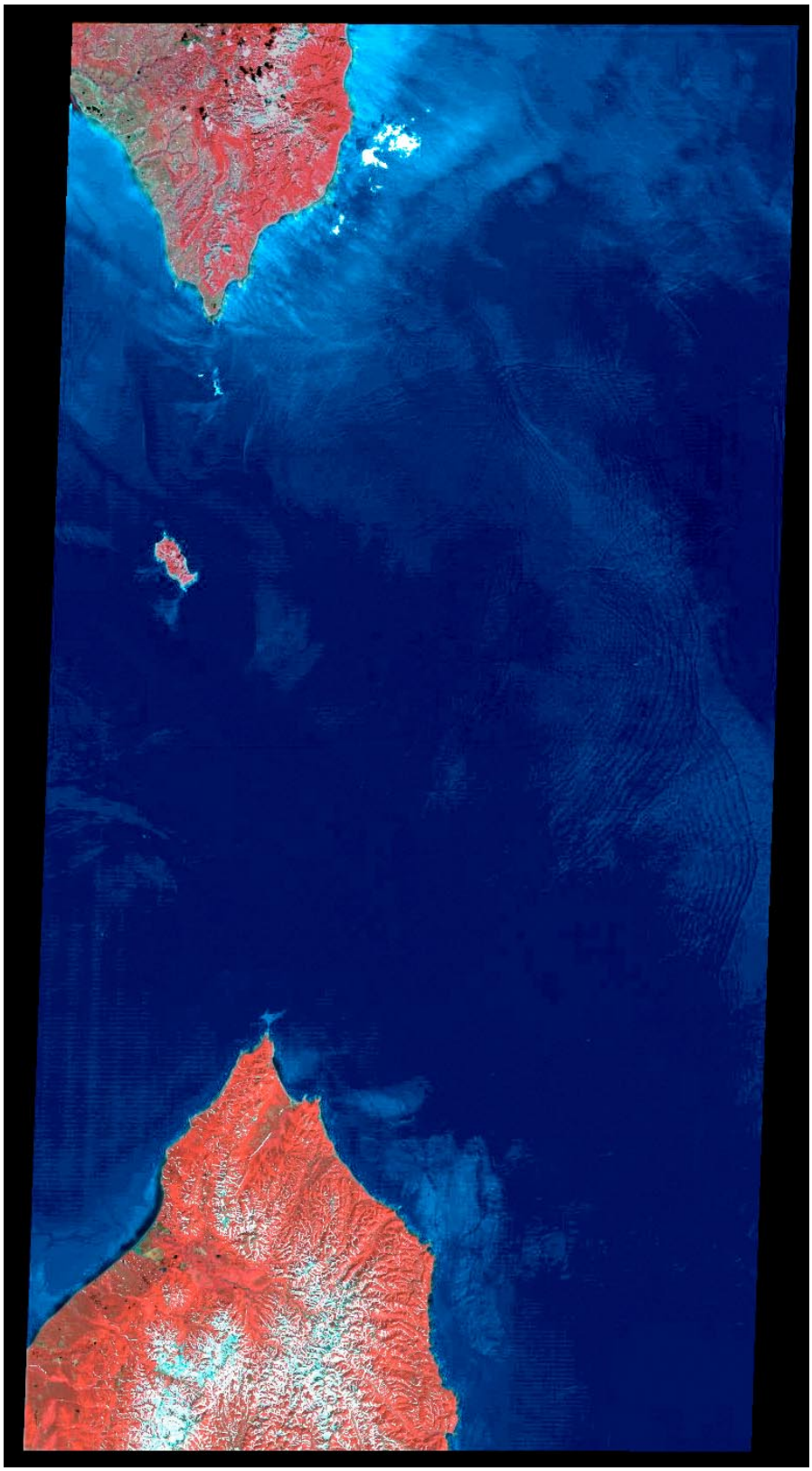


Figure 5. ASTER false color VNIR image near northeast coast of Kamchatka acquired on 4 July 2000 at 0046 UTC. The image shows the signature of fine scale internal waves propagating seaward. Imaged area is 60 km x 120 km.