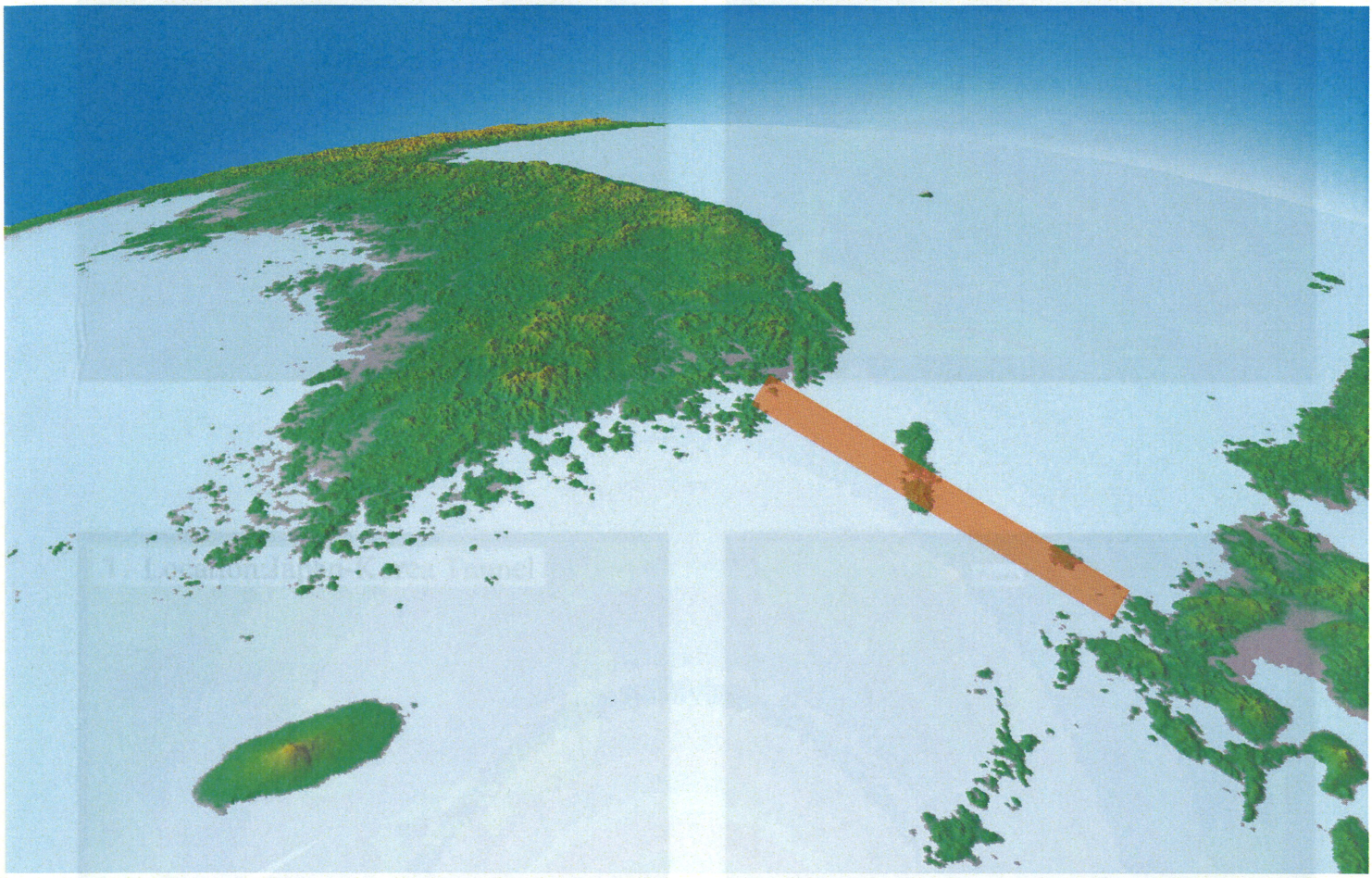
№323

Dream of 21th century

The JAPAN-KOREA TUNNEL



There lies the Strait nearly 200 kilometers wide between the Japanese Archipelago and Korean Peninsula, which are both located in the Eurasian Continent. The regions surrounding the Strait are densely populated and highly developed economically.

A project of "Japan-Korea Tunnel" is such that a submarine tunnel will be built to connect Japan to Korea, going through the two islands, Iki and Tsushima.

"Japan-Korea Tunnel" is designed to serve the multi-purpose of providing a traffic system running rapid trains, as well as transport networks of the energy, information and a variety of resources between Japan and Korea.

"Japan-Korea Tunnel" is, when constructed, to create a new transportation means of an overland traffic in addition to both ocean-going and air transports on which passenger and freight traffics between our two countries have to date depended. Implementation of the project will contribute to establishing a stabilized transport system between Japan and Korea by transferring a substantial part of passengers and freights from conventional transport facilities to a new overland transport system.

The construction of "Japan-Korea Tunnel" will further facilitate bilateral exchanges, personal, economic and cultural, while putting both countries' technological and industrial levels on an equal footing, thereby ultimately bringing about an equitable prosperity in Asia.

"Japan-Korea Tunnel" will become a main artery mutually communicating the neighboring

Non-Profit Foundation The Japan-Korea Tunnel Research Institute
513-AZABUDAI UNIHOUSE, 1-1-20 AZABUDAI MINATO-KU TOKYO, 106-0041 JAPAN
TEL 03－3589－4188 FAX 03－5570－1634
E-mal:office@jk-tunnel.or.jp HomePage:www.jk-tunnel.or.jp

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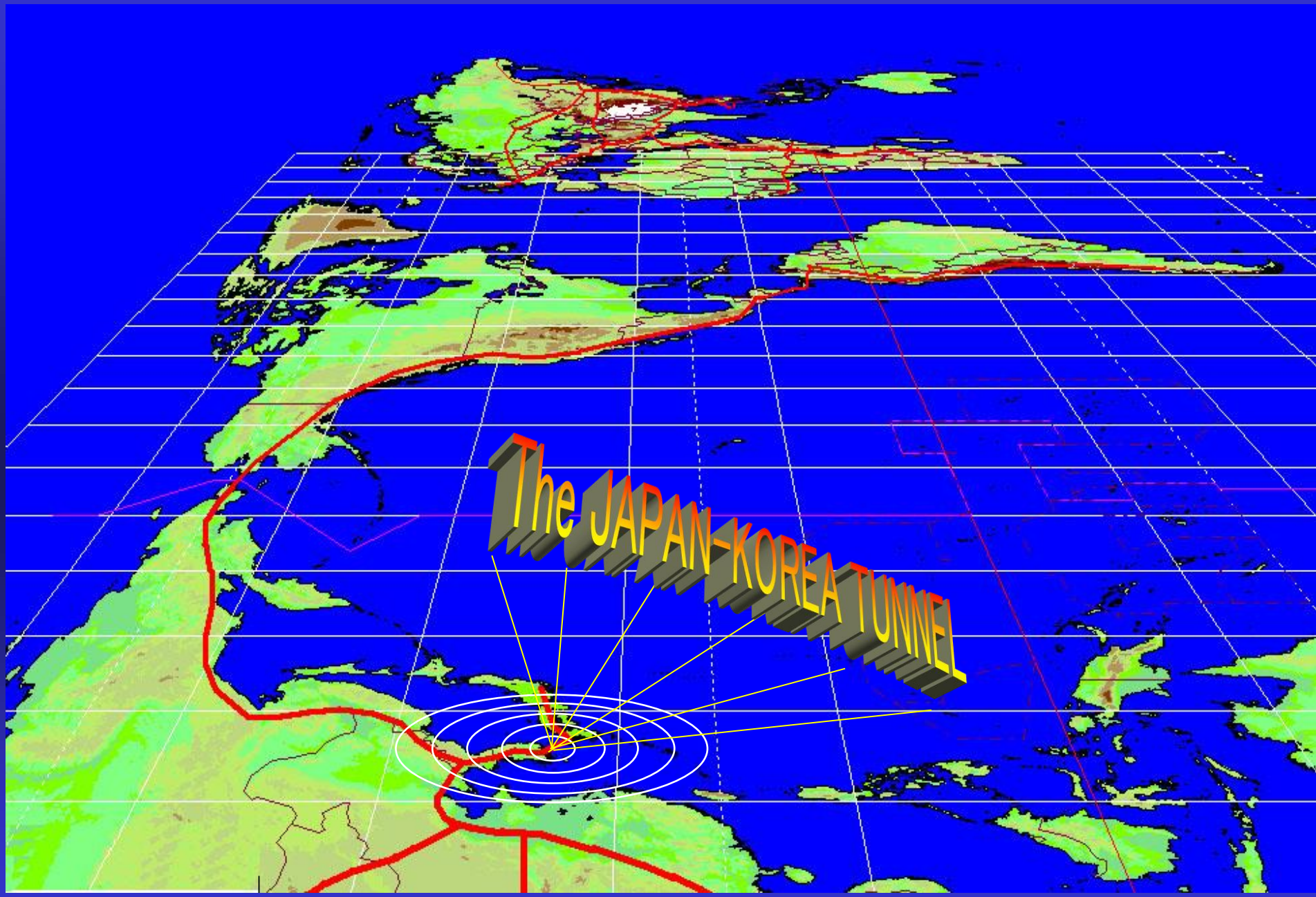
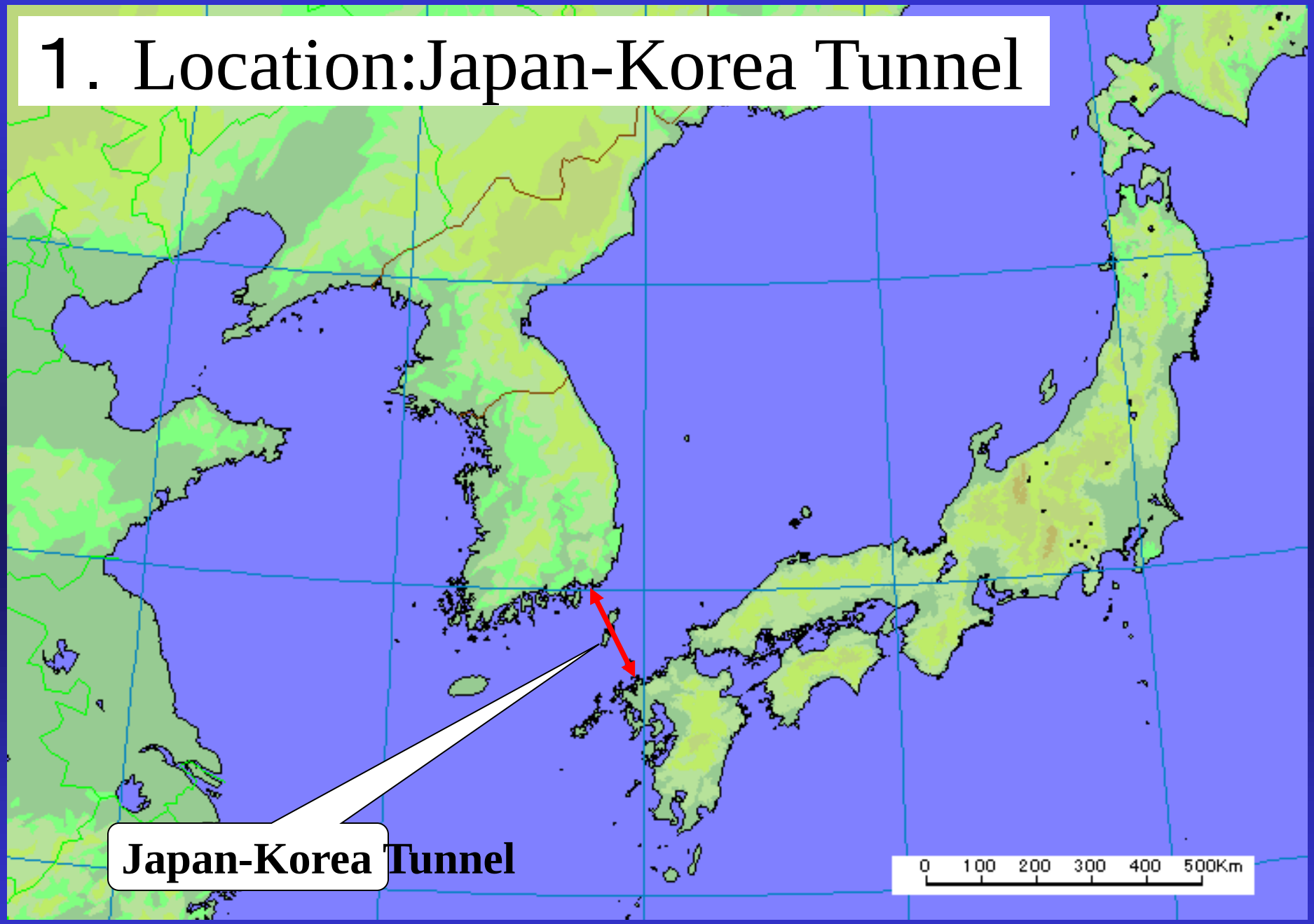
The Japan-Korea Tunnel Project

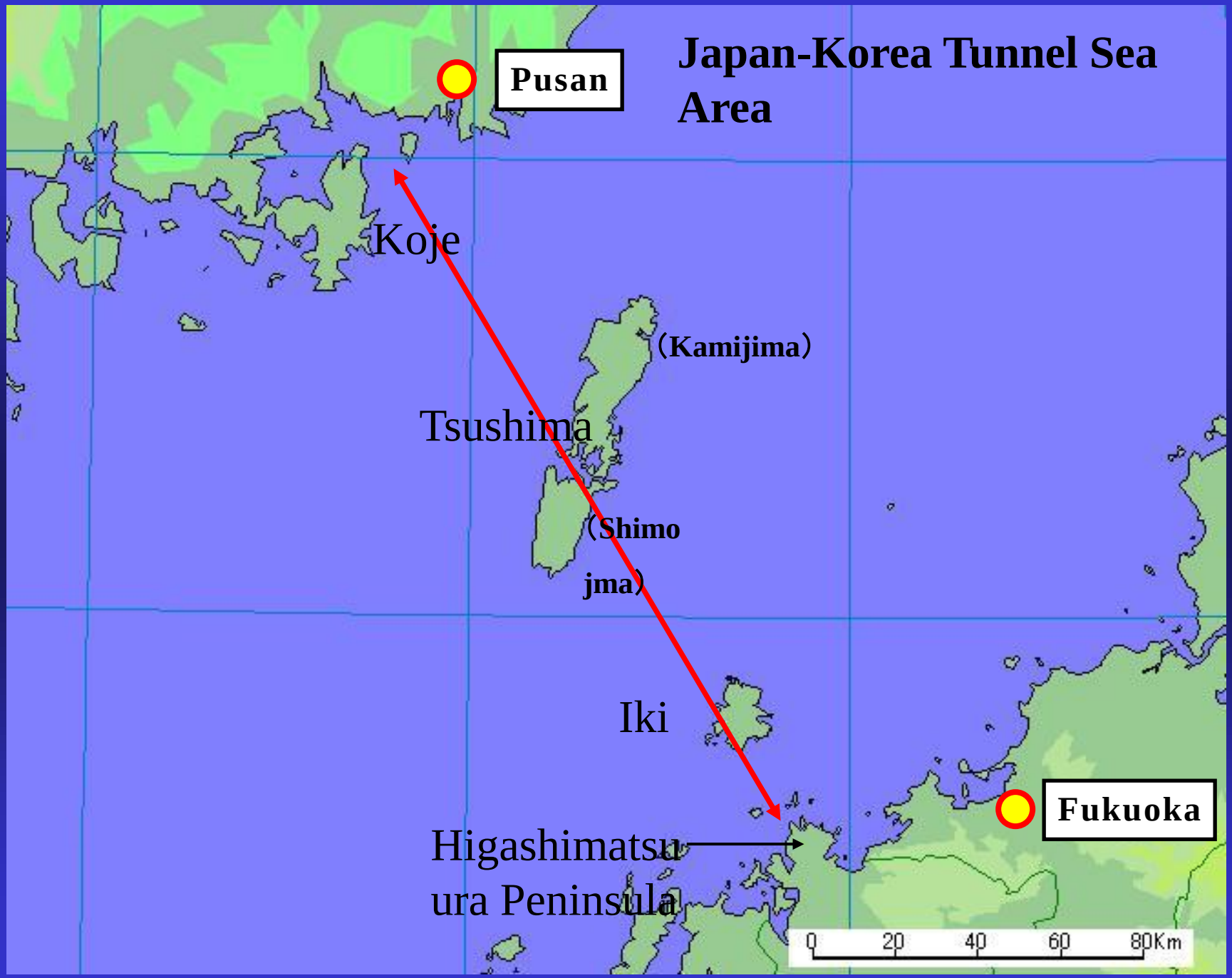
Non-Profit Foundation
The Japan-Korea Tunnel Research Institute


The JAPAN-KOREA TUNNEL

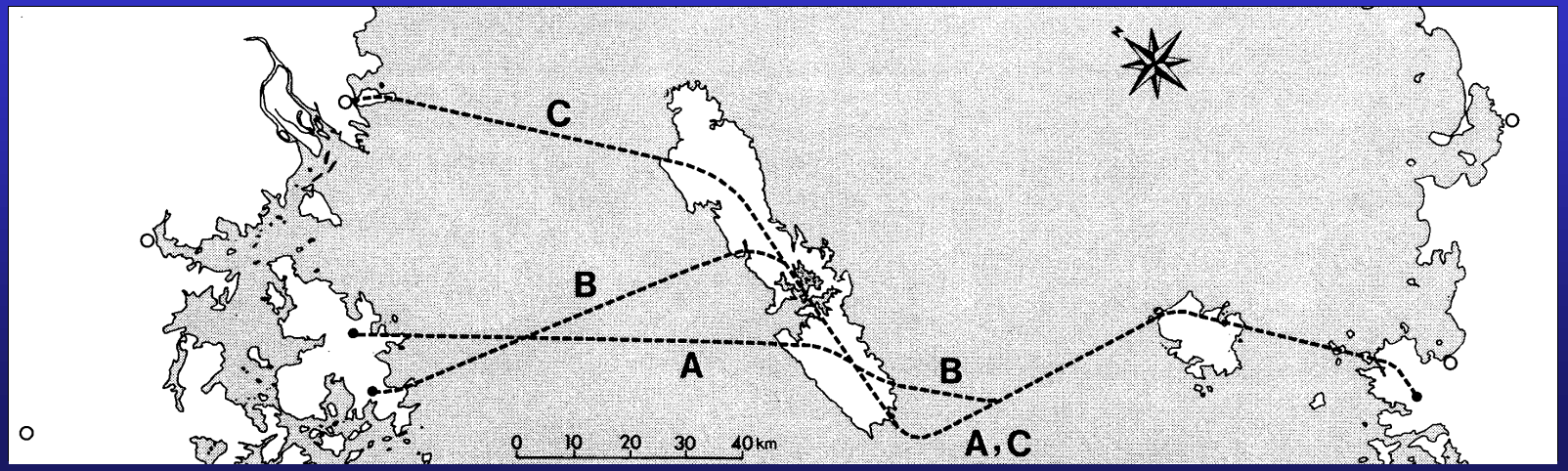
1. Location:Japan-Korea Tunnel

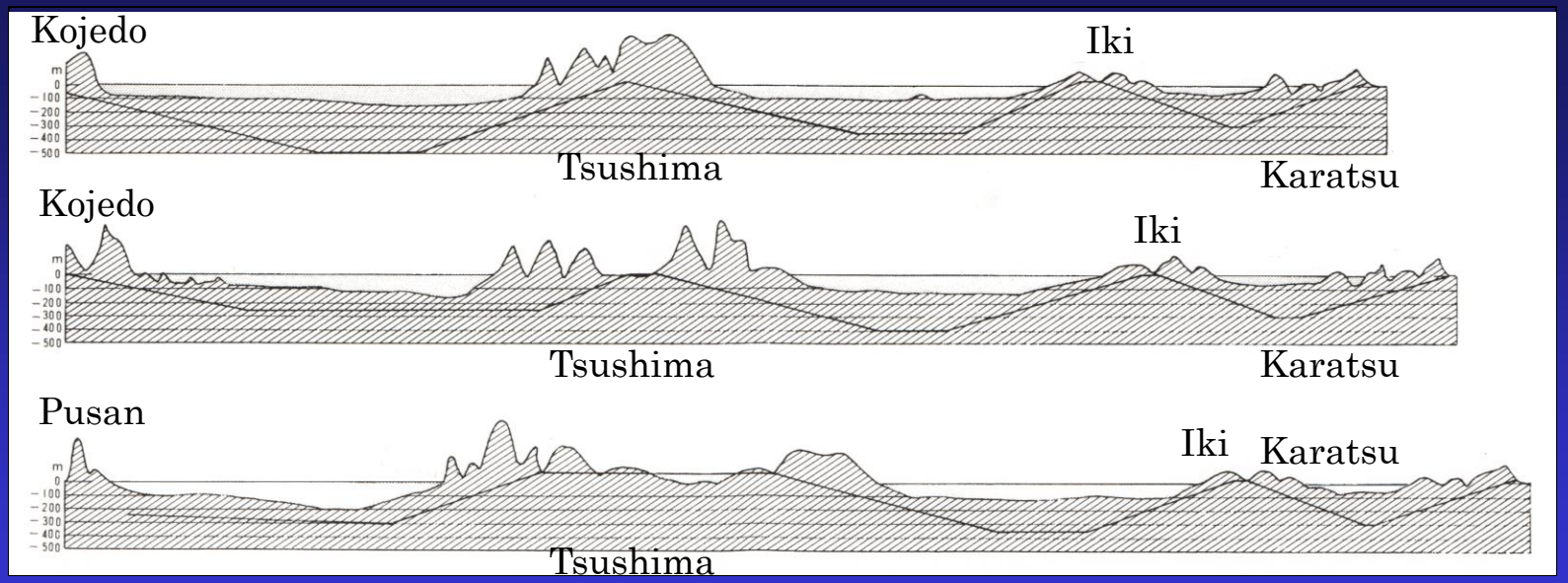


Location of Japan-Korea Tunnel


Japan-Korea Tunnel Sea Area
Pusan
Koje
(Kamijima)
Tsushima
(Shimo
jma)
Iki
Fukuoka
Higashimatsu
ura Peninsula
0
20
40
60
80Km

Three routes for the Tunnel





A

B

C

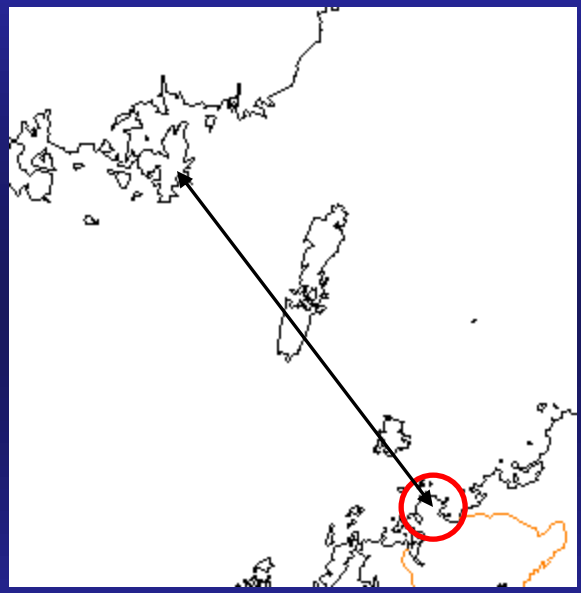
Three routes for the Tunnel

		Rout A	Rout B	Rout C
Rout		Karatsu-Iki-Tsushima (Shimojima)-Koje island	Karatsu-Iki-Tsushima (Shimojima-Kamijima)-Koje island	Karatsu-Iki-Tsushima (Shimojima-Kamijima)-Pusan
Entire Extension		２０９Ｋｍ	２１７Ｋｍ	２３１Ｋｍ
Distance of the sea bottom	Iki Str.	２８Ｋｍ	２８Ｋｍ	２８Ｋｍ
	TsushimaStr. East Channel	５１Ｋｍ	４９Ｋｍ	５１Ｋｍ
	TsushimaStr. West Channel	６６Ｋｍ	６４Ｋｍ	４９Ｋｍ
	Total extension of Sea area	１４５Ｋｍ	１４１Ｋｍ	１２８Ｋｍ
Maximum depth	Iki Str.	５５ｍ	５５ｍ	５５ｍ
	TsushimaStr. East Channel	１１０ｍ	１１０ｍ	１１０ｍ
	TsushimaStr. West Channel	１５５ｍ	１６０ｍ	２２０ｍ
Extension of Land area		６４Ｋｍ	７６Ｋｍ	１０３Ｋｍ

Three routes for the Tunnel

Usage	Shinkansen、Linear motor car、Road,Railroad,、Shinkansen - Linear motor car combination method
Term of work	about 15 to 20 years
Cost of construction	
Station	Stations of Iki and Tushima to be studied in future
Artificial island	With ventilation facilities, it is necessary one artificial island for the distance of some 20km each

2. Geological Outlook ～Higashi Matsuura Peninsula～



- **Formation of Karatsu Coal field**

  Sedimentary of the Tertiary

  Basalt(lava)

  Granite

- **Granite includes a sand part called Masa-shaped weathering**

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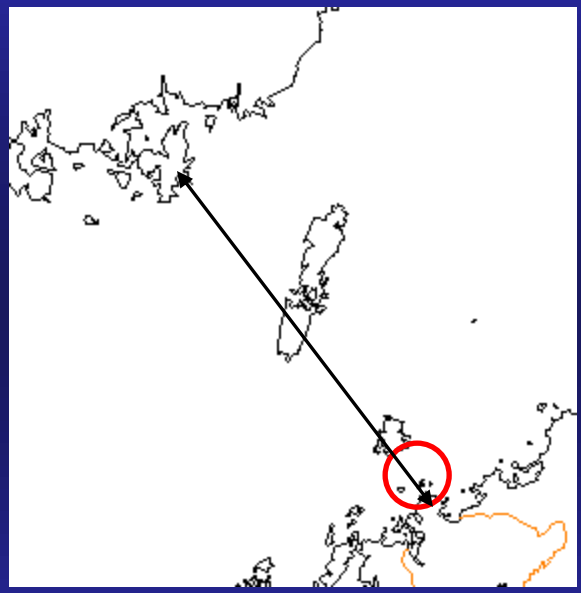
Easy to collapse

2. Geological Outlook ～Iki Channel～

Various volcanic rocks exist at the sea bottom



Water inflow on the occasion of digging

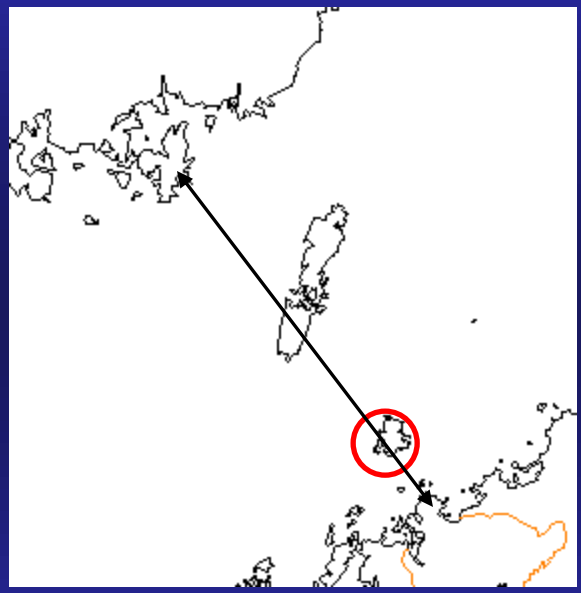
（Judging from experience of the Seikan Tunnel）

2. Geological Outlook

～Iki Island～

- **Sedimentary of the Tertiary（Iki Group）and basalt(lava) covering them**

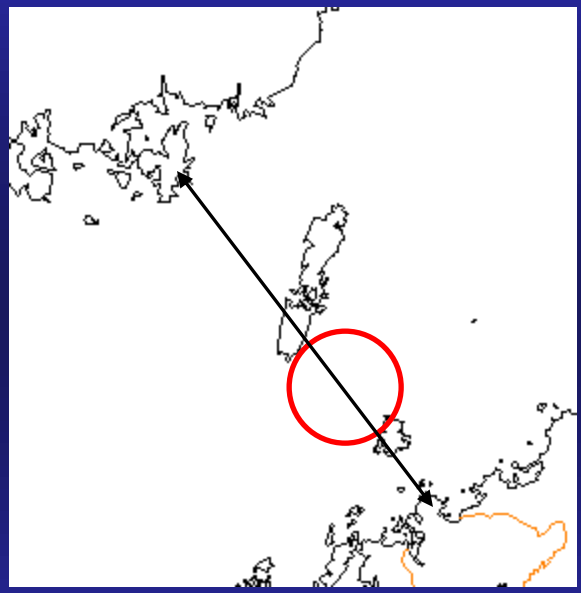
- **Aqauatic resources are tight**



2. Geological Outlook

～East Channel～

・**Surrounding Hichirigasone(shore reef) is a heavy concentration of volcanic rocks**



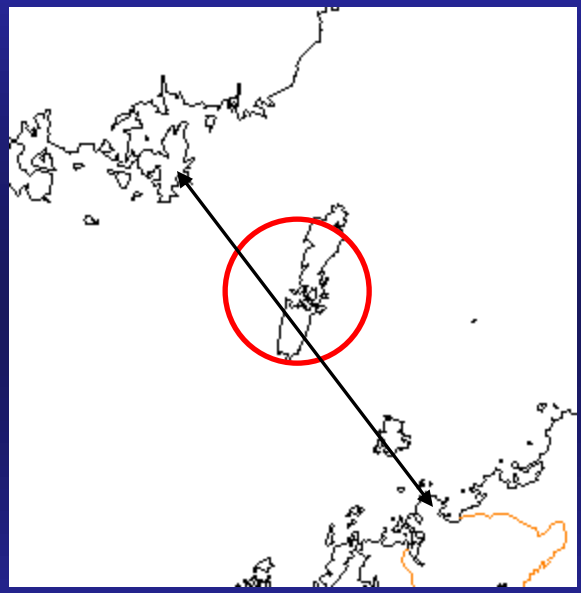
Much water inflow

・**the depressed Tertiary stratum buried by other soft stratum**

2. Geological Outlook ～Tsushima～

・**Granite injected in the southern part、the outskirts department received a thermal metamorphic change and become hard**

・**Taishu Group(Sedimentary of the Tertiary）**

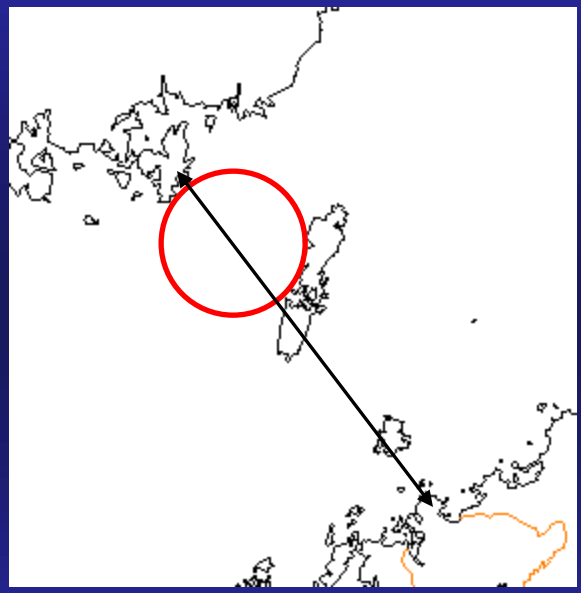


A most few problem may caused among all routes

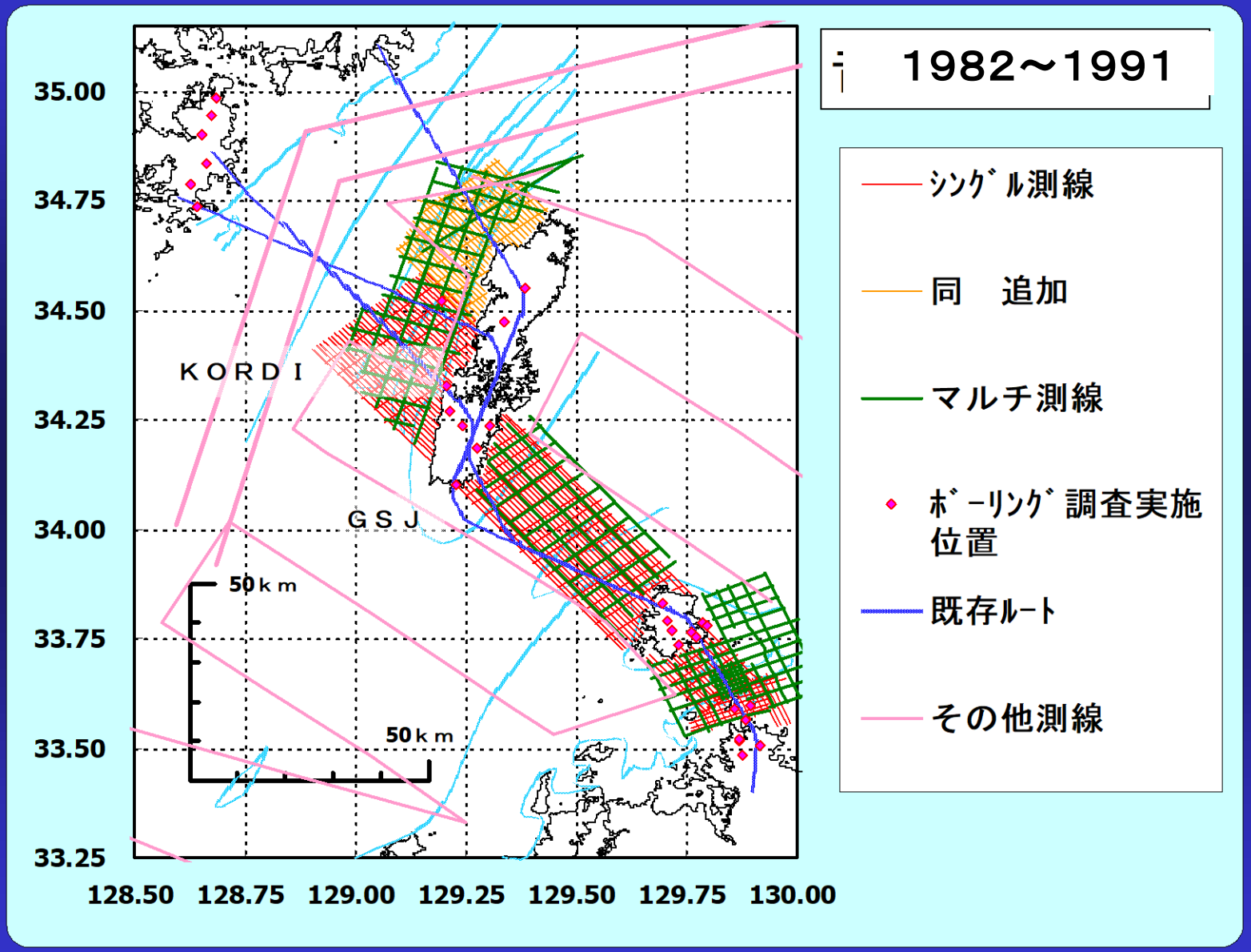
2. Geological Outlook ～West Channel～

- **Taishu Group of the Tertiary**

- **Kyongsang Group of Mesozoic becomes dominant in Korea side. The details are still unclear.**



3. Summaries of the Research



3. Summaries of the Research

Designs/Construction
method-related survey

①Conventional method(Seikan Tunnel construction method)

②A shield method

③A submerged tunnel method

④A submerged floating tunnel method

⑤An artificial island

⑥A track choice and its usage

3. Summaries of the Research

Environment-related research

①Research on the current environmental situation and its impact(both land and sea areas)

②Research on land use and its impact

③Research on the reality of fishery and its impact in the related area

④Weather research:land and sea areas(ocean weather /tide/an ocean current)

⑤Seawater exchange rate and ecosystem investigation in Asou Bay

4. Overview of Routes

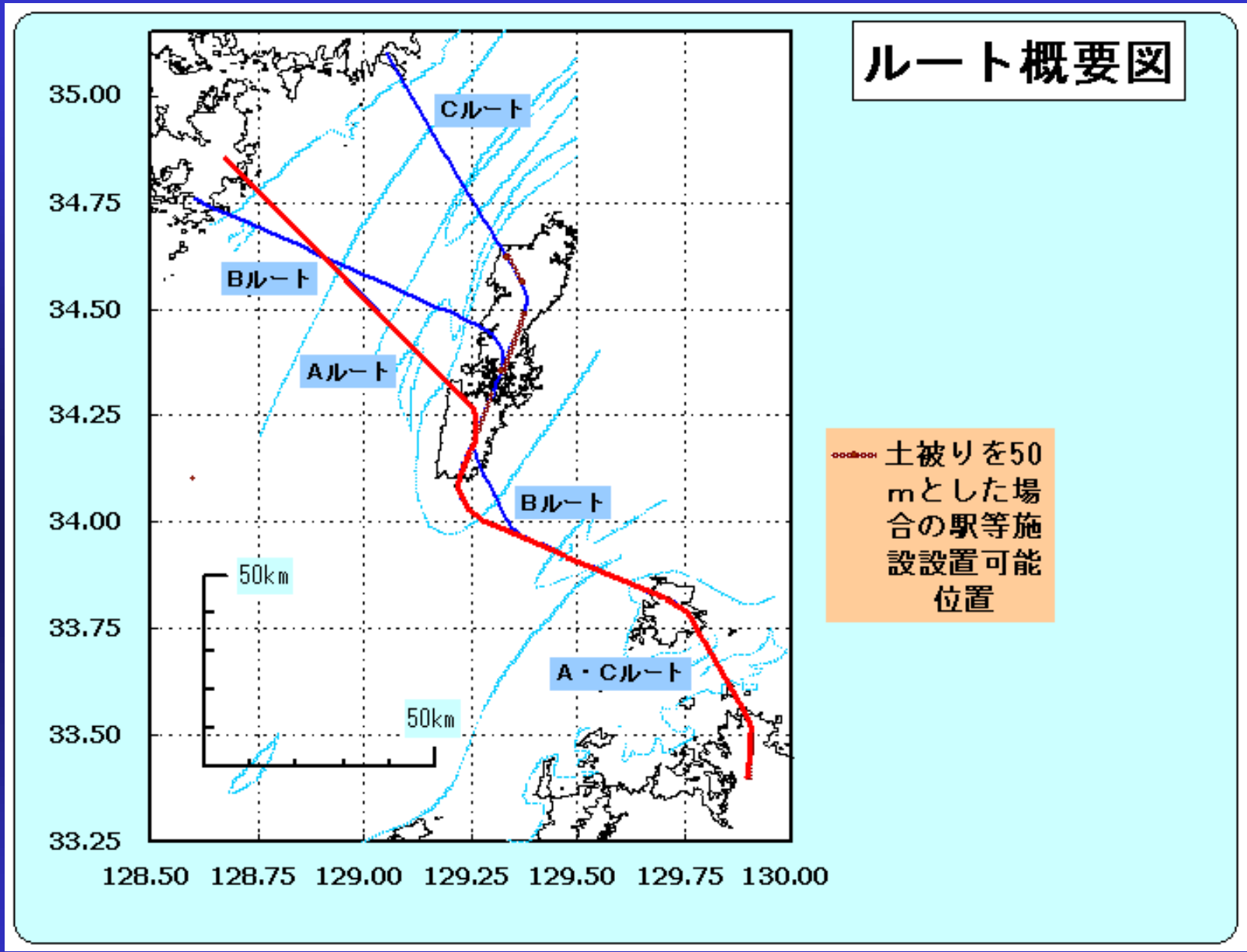
A premise condition of the route choice

①Distance of the sea bottom

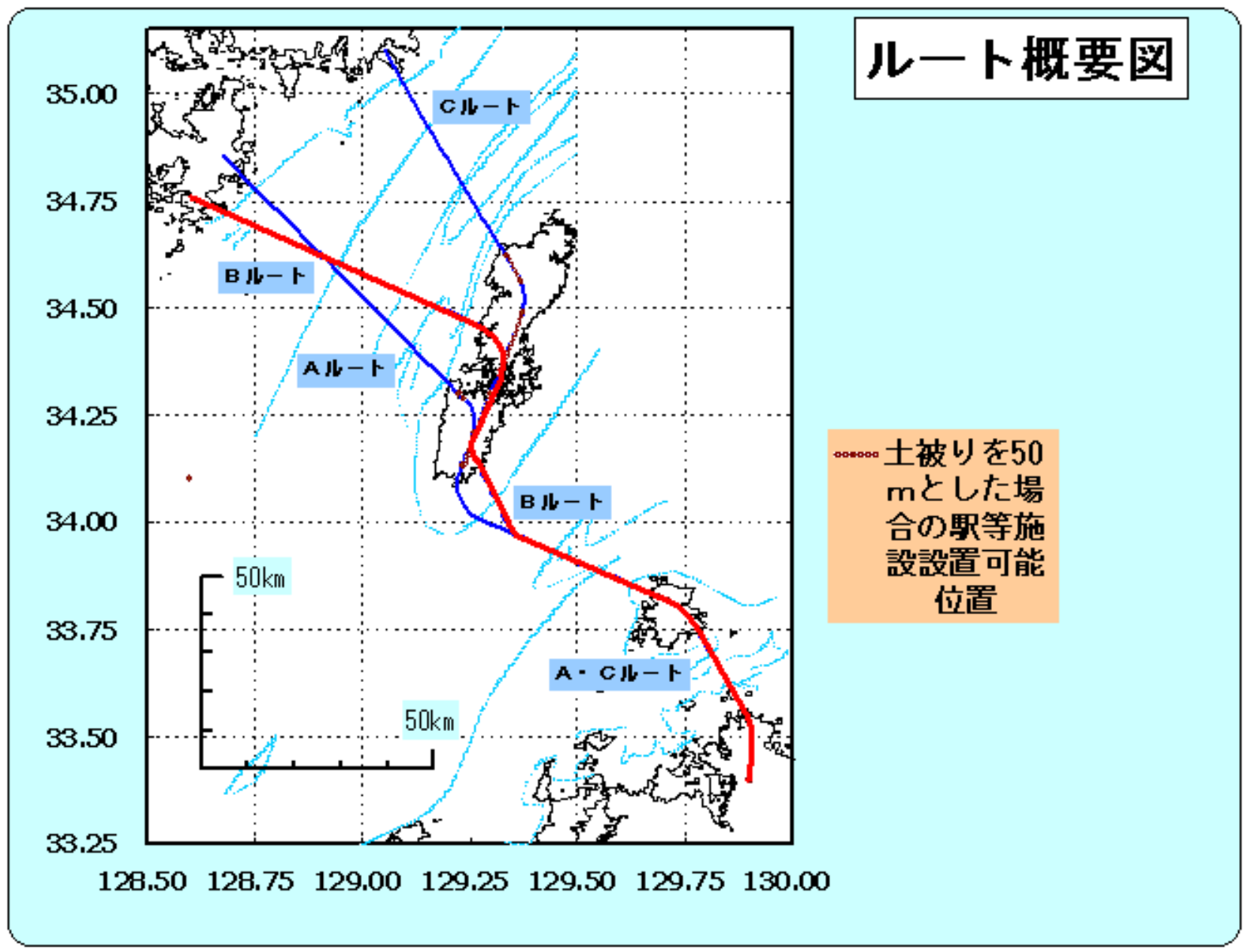
②Sea bottom topography and depth

③Geological conditions

④Geographical conditions of land base

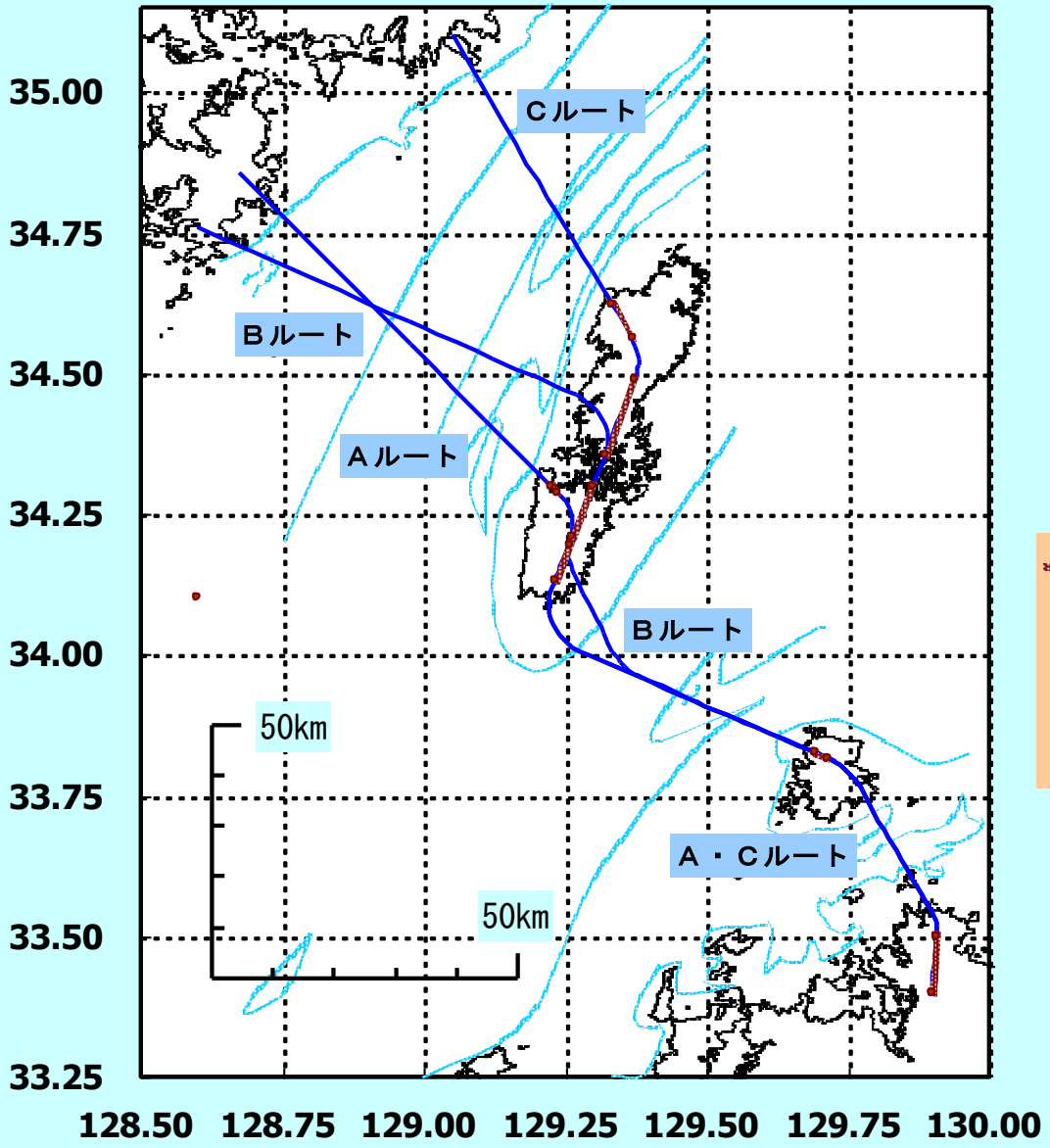


Route A: To dig a deep place, avoiding fault and soft geological feature



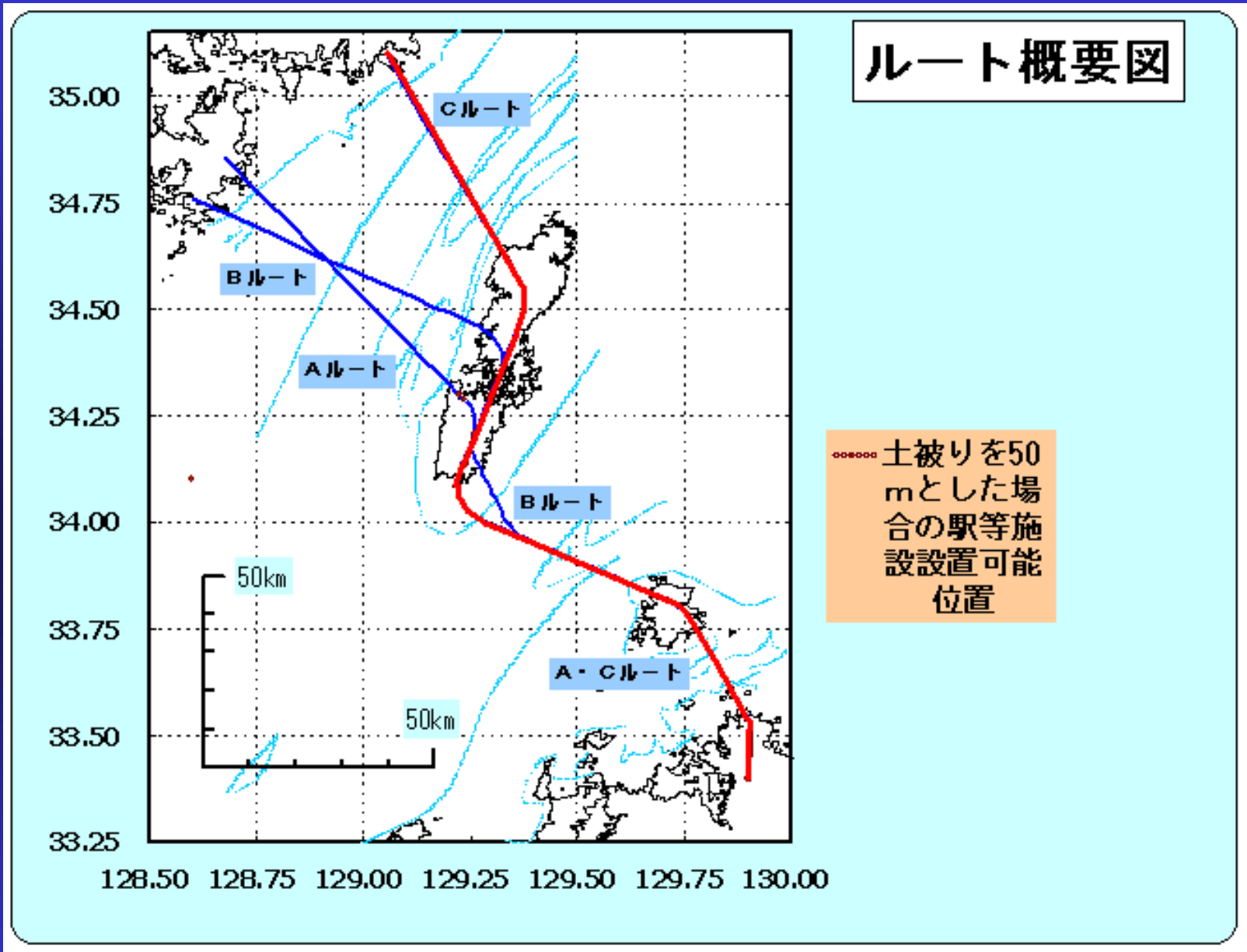
Route B:The route mainly takes Shield method

ルート概要図



土被りを50ｍとした場合の駅等施設設置可能位置

Typical routes



Route C : The route goes directly to Pusan. Distance of the part of the sea bottom becomes shortest

4.Overview of Routes

～Construction period,Construction cost～

・Man-made island:need to place in every 20Km

・Construction period:15 years ～20 years

・Construction cost:The calculation is not yet done.

5.A Track Standard and Section Construction of Tunnel

～Track Standard～

The tunnel must cope with the advanced demand

⇩

・Conditions to be satisfied

・High speed / Large quantities / Multi-purpose transportation system

・Security / Certainty / Simpleness and easiness /

・Arbitrariness

5.A Track Standard and Section Construction of Tunnel

～Track Standard～

- **Transportation forms to be considered with conditions for multi-purpose**

  - **cars / travelers / freight**
  - **energy and information releases**

5.A Track Standard and Section Construction of Tunnel

～Track Standard～

・Large quantities/High speed/Multi-purpose transportation system

①A Shinkansen method

②A road-railroad combination method

The Shinkansen method is well established and fitted as the fist plan

5.A Track Standard and Section Construction of Tunnel

～Track Standard～

- **A track standard of Shinkansen bullet train at present**

①Maximum track incline at 25／1，000

②Minimum curve radius at 6，000m

This standard can permit even road.

5.A Track Standard and Section Construction of Tunnel

～Section construction of a tunnel～

- **Elements constituting a tunnel**

①Kind of car running in the tunnel

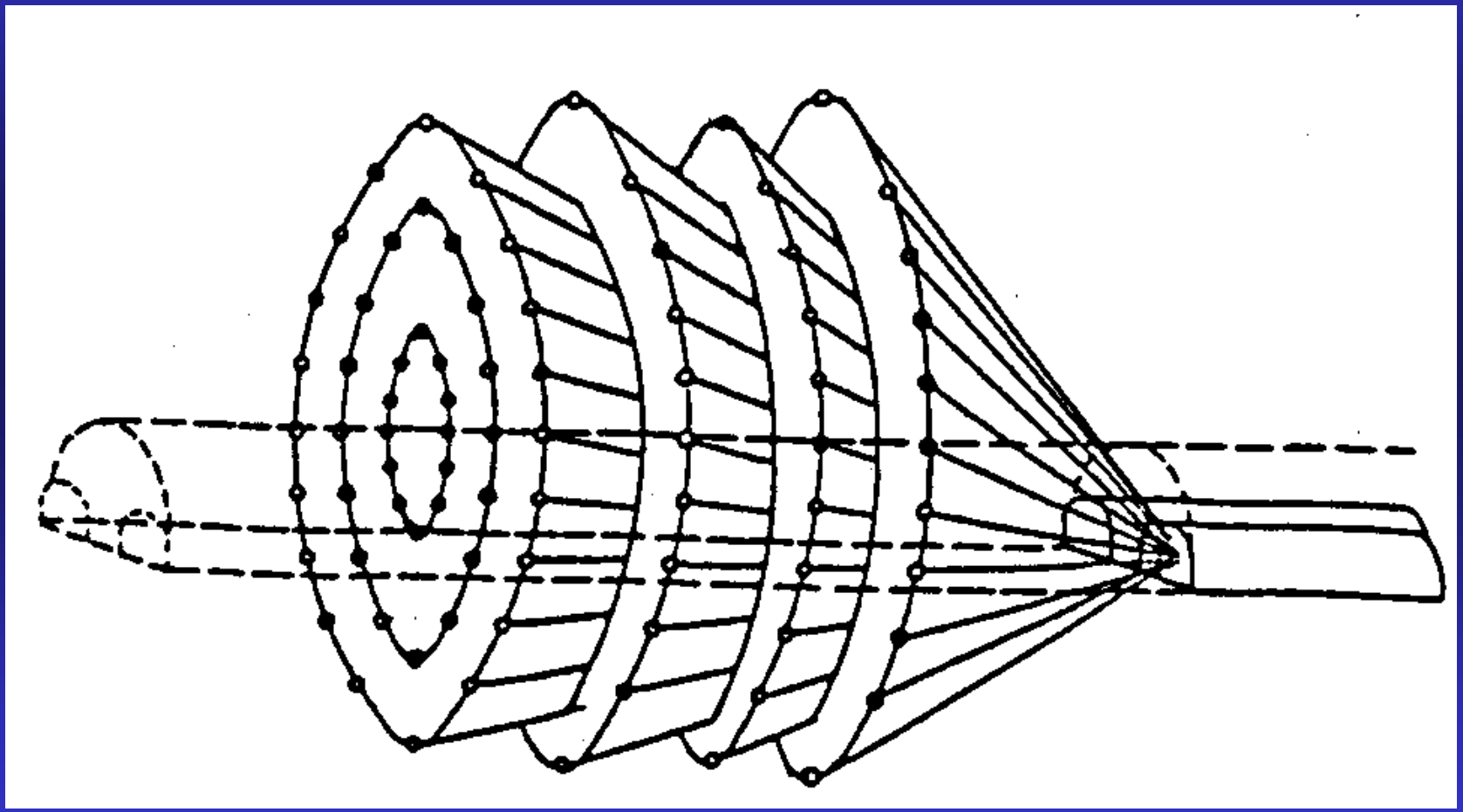
②Traffic lane capacity:single line or double track or many traffic lanes

③The multi-functional use by a tunnel

④Many accommodations and their exclusive spaces

6.Method of Construction

The Conventional tunnel method of Seikan Tunnel



Geological Survey Issues

- **Possible geological problems**

①Iki Channel:Distribution of volcanic rocks and a neighboring geological feature

②East Channel:Distribution of volcanic rocks.Point to be considered is the condition of its soft stratum ,and conformation of the property.

③West Channel:Property of fault,distribution of the soft stratum and the property, a geological feature of the sea bottom in the Korea side.