# THE INDIAN OCEAN IN U. S. STRATEGY

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18 December 1971

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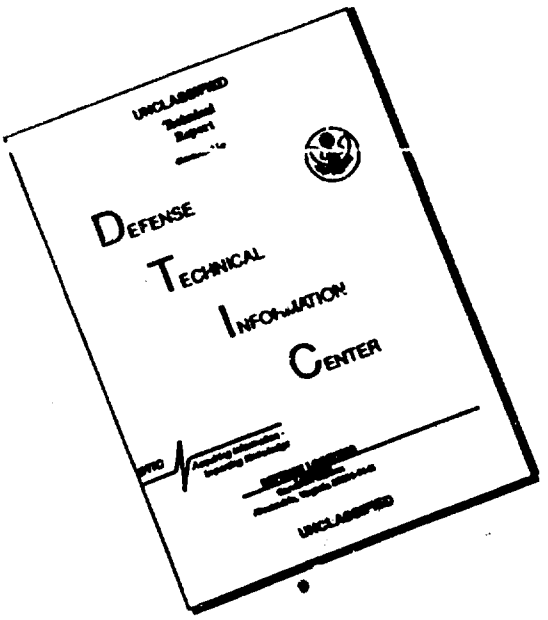


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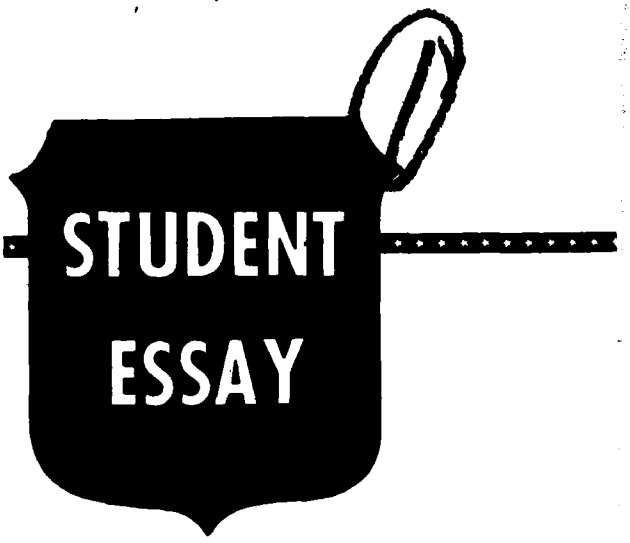




18 DECEMBER 1971



# THE INDIAN OCEAN IN US STRATEGY



BY

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USAWC RESEARCH ELEMENT

(ESSAY)

# THE INDIAN OCEAN IN US STRATEGY

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## ABSTRACT

AUTHOR: Gene A. Weaver, LTC, AR
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The basic question is what is the importance of the Indian Ocean and its rimland. A study was made, focusing on the geographic element of power, to determine the strategic importance of the region. Although not technically a part of the rimland, nations conterminous to the Red Sea and the Persian Gulf were included because of site and situation aspects of access. A literature search was used with reliance on recognized sources. Access through the surface gate is followed by air access in geographic concern. The paucity of inter-ocean islands reinforces the necessity to insure access. Precarious economics, political fragmentation, ~~a power~~ vacuum of law ~~and order~~, and dominance of the world's petroleum supply make this a region of increased emphasis for United States strategy. Research was terminated as of 1 November 1971.

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## PHYSICAL GEOGRAPHY

Physical geography is concerned with geographic systems in the natural state with limited consideration to man's influence. The Indian Ocean Basin is examined by investigating its oceanography, climate, landform, soils, and vegetation.

### Oceanography

The Indian Ocean is bounded by India and Iran on the north; by Arabia and Africa on the west; by the Malay Peninsula, the Sundra Islands, and Australia on the east; and on the south by Antarctica. Arbitrary separation from the Atlantic Ocean is made at longitude 20E and from the Pacific Ocean at longitude 147E. Because of low latitude maritime traffic, it is considered to be a tropical ocean, however it extends from latitude 30N to latitude 70S. The ocean narrows steadily north where it is separated by India into the Gulf of Arabia and the Bay of Bengal. Two adjoining seas connect with the Gulf of Arabia - the Red Sea through the Strait of Bab el Mandeb and the Persian Gulf through the Strait of Ormuz.

Few large rivers empty into the Indian Ocean, most of them being the drainage system of the Indian Peninsula. Although few in number these rivers plus the rainfall of the monsoon provide large amounts of non-saline water making the surface water of the Bay of

Bengal a region of abnormally low salinity.

A longitudinal ocean ridge, the Indian Ridge, extending from India to Antarctica separates the ocean floor east and west. Two deep water troughs connect with the Atlantic and Pacific Oceans influencing the deep water circulation and its attendant distribution of properties.

The absence of near-surface ocean floor projections results in few important islands. Inspection reveals that the Indian Ocean exhibits a marked scarcity of islands when compared with the other large water bodies and provides no strategic mid-ocean land masses. An exception is the small island, Diego Garcia. Madagascar, Ceylon and Sokatra are continental islands having little intra-ocean strategic significance.

Eighty-six percent of the ocean's bottom deposits are made up of pelagic sediments (globigerina ooze). Compared with the Atlantic and Pacific Oceans, the high proportion of sileceous ooze is quite striking and is attributable to its shape and diatomacious band near the cold water southern boundary. The ultimate result is few valuable undersea resource deposits.

Surface currents generally follow the monsoon, turning when crossing the equator. Strong northerly flow accompanied by upwelling occur off Somalia and the southeast coast of Arabia lowering the temperature near the shore and influencing the dryness of the

desert area. Counterclockwise currents prevail in the southern Indian Ocean. Mixing occurs when contacting the circumpolar current and is reflected by alternating streaks of warm and cold surface water. (Figure 1)

Deep water circulation is characterized by an absence of large amounts of sinking surface water since the ocean is basically a warm water body. Deep water circulation is slow reflecting the warm water dominance and low saline content. This generalization is somewhat complicated by high salinity water entering from the Red Sea. The amount, however is small and exercises less widespread influence than the Mediterranean upon the Atlantic as an example.

The Indian Ocean is essentially ice free with pack ice and ice bergs limited to about latitude 58° S and latitude 45° S respectively[1]. Surface and subsurface movement is unrestricted by ice conditions.

## Climate and Weather

Climate of the ocean region is not greatly important except for

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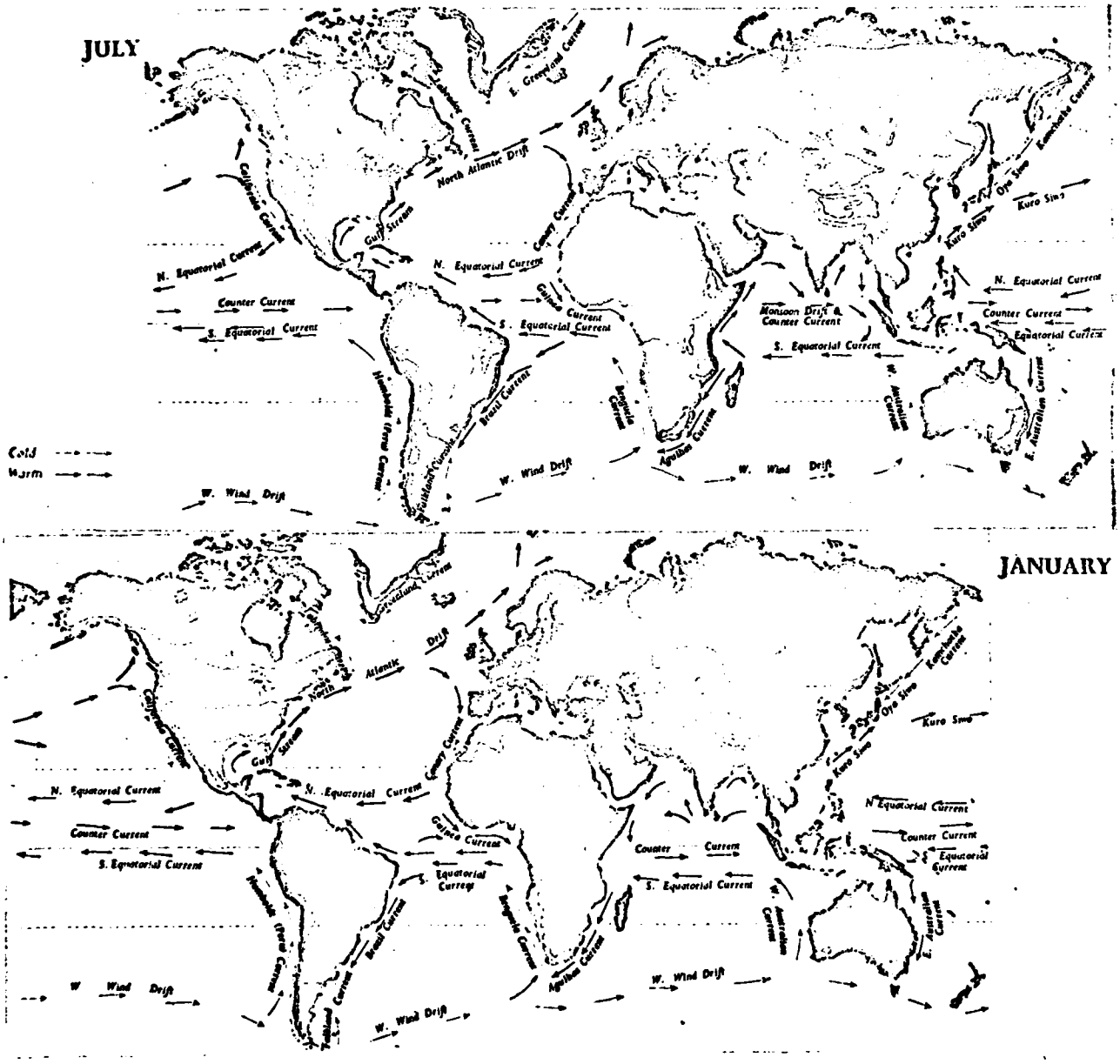
[1]"Indian Ocean," Encyclopaedia Britiannica, 1956, Vol. 11, pp 246-247.

FIGURE 1

# OCEAN CURRENTS






SOURCE: Oxford Economic Atlas

the controls that extend and operate in the climate(s) of the rimland. Weather in the ocean region is more important since it influences man's ability to function in an ocean environment as well as in the rimland.

Climate classification is generally as expected based upon the region's latitudinal and longitudinal delineation. (Figure 2) Certain climatic irregularities exist that have strategic importance. The northeast coast of Africa, between about $3^{o}$ S and $12^{o}$ N latitude, exhibits a tropical and subtropical desert climate that is not representative of equatorial continental east coasts. The east coast anomaly is subject to two monsoons yet remains dry. Basically the surface air flow lacks depth therefore convective upturning is not great. The monsoon currents are capped by another current moving in a different direction. Consequently the clouds forming in the monsoon current are unable to further develop and expand in the dry, stable air of the easterlies aloft that have traversed long continental tracks. Before and upon reaching the coast the currents shift to a longitudinal flow without depositing appreciable percipitation inland. The sparse rainfall reaches its maximum during the intermonsoon periods of convergence[2]. This

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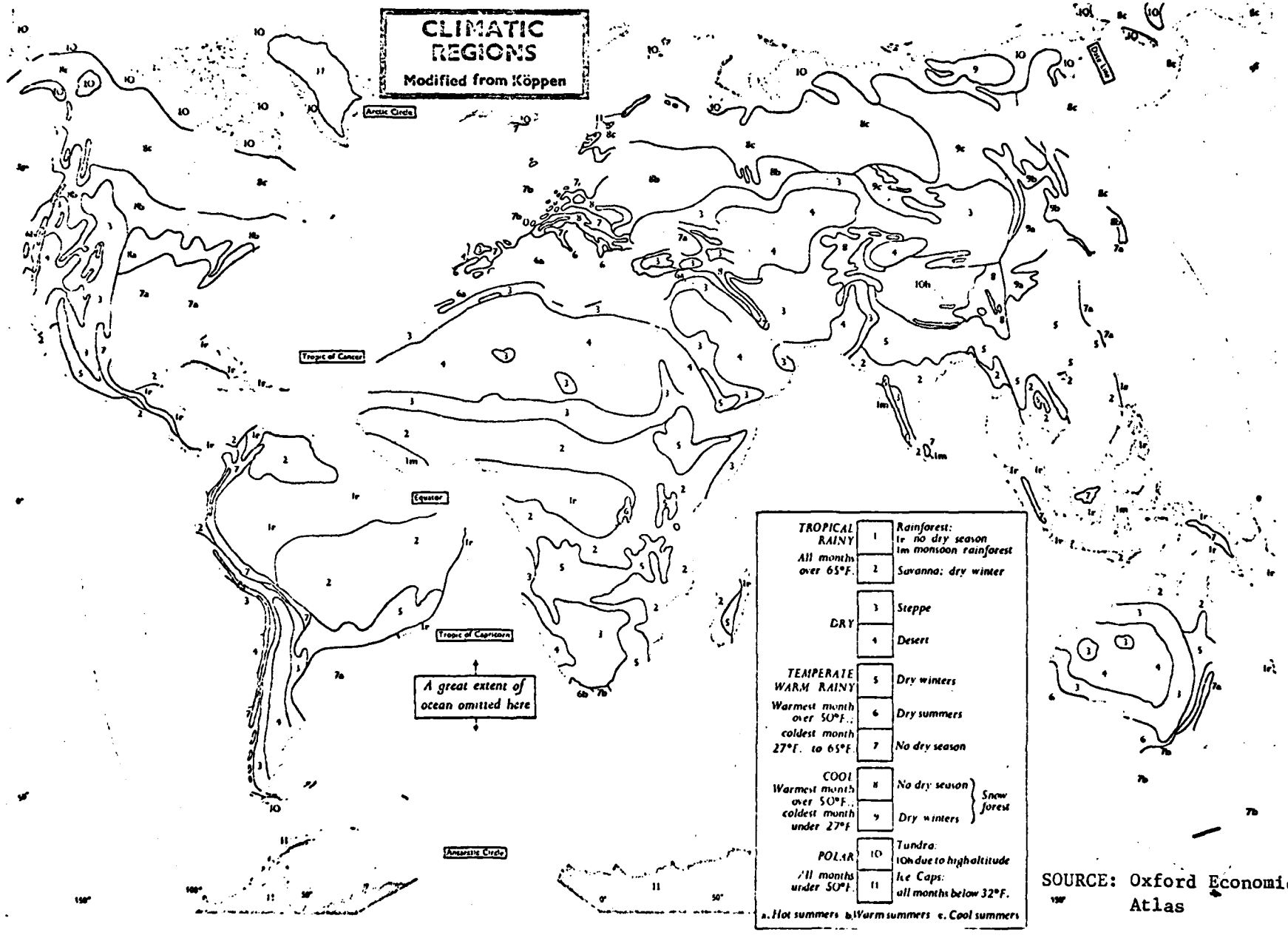
[2]Glenn T. Trewartha, The Earth's Problem Climates (1962), p. 145.

FIGURE 2




SOURCE: Oxford Economic Atlas

condition presents an area along the western rimland, centrally located, that could provide all weather operations controlling a significant part of the Indian Ocean basin and certainly the northwest passages.

Most of the northwestern and north central rimland is an area of rainfall deficiency complicating agricultural and industrial advancement. Improved desalinization of sea water offers a partial solution to this age old problem of water shortage.

The Indian Peninsula is known for its winter dry season marked by high pressure dominance, and summers characterized by the southwest monsoon. The southwest part of the Bay of Bengal is the earth's most active region of cool season tropical cyclogensis with an average of 20 tropical storms annually[3].

An understanding of India's unusual climatic features assists in a strategic appraisal of the rimland. Dry season temperatures are extremely high with over 50% of the land area experiencing temperatures in excess of 90°. During this period the skys are clear and rainfall is meager resulting in maximum daily heating. Temperatures drops rapidly with the monsoon burst resulting in heavy

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[3]Ibid., pp. 153-164.

rainfall and intense cloud cover. Winters are warm with an average of 55°. This is attributable to the Himalaya Mountain blockage of Siberian continental polar air[4].

Southeast Asian climate is characteristically complex resulting from air streams and their boundary surfaces, the fragmented insular and peninsular nature of the land area, and numerous highlands with a variety of directional alignments. Generally, the north-south movement of the climatic systems, following the sun, coupled with the above factors yields numerous local climates and weather conditions. Sufficient rainfall is experienced to classify the Southeast Asian rimland as a tropical wet climate.

West Australia on the other hand is largely arid and semiarid. The continental position in the subsiding and divergence zones of the Southern Hemisphere subtropical high pressure systems insures that dry climates occupy the majority of the Indian Ocean rimland of Australia. As with the northeastern coast of Africa, western Australia could provide strategic bases affording all weather operations for the control of the east passages to the Indian Ocean.

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[4] Ibid., p. 164.

## Landform(s)

Landform in the Indian Ocean basin is characterized by narrow coasts backed by escarpments of varying heights and steepness. Except for the Zambesi in Africa and the large rivers of India there is a paucity of estuaries. The latitudinal position of the land masses and absence of glaciation result in comparatively short coast lines and few natural deep draft harbors. There is a pronounced absence of inter-ocean islands. With the exception of the open southern access, Indian Ocean access is controlled by connections between other water bodies. This situation is a weighted advantage in power politics. Landform limits access to the Red Sea and the Persian Gulf and the Indonesian landmass forms a natural barrier between the Indian and Pacific Oceans. Strategically, control of landforms adjacent to connecting water bodies controls surface access to the Indian Ocean[5]. (Figure 3)

## Soils

Over 50% of the region's soils are desert or semi-desert soils, most of the remainder are the tropical red earths, with a small

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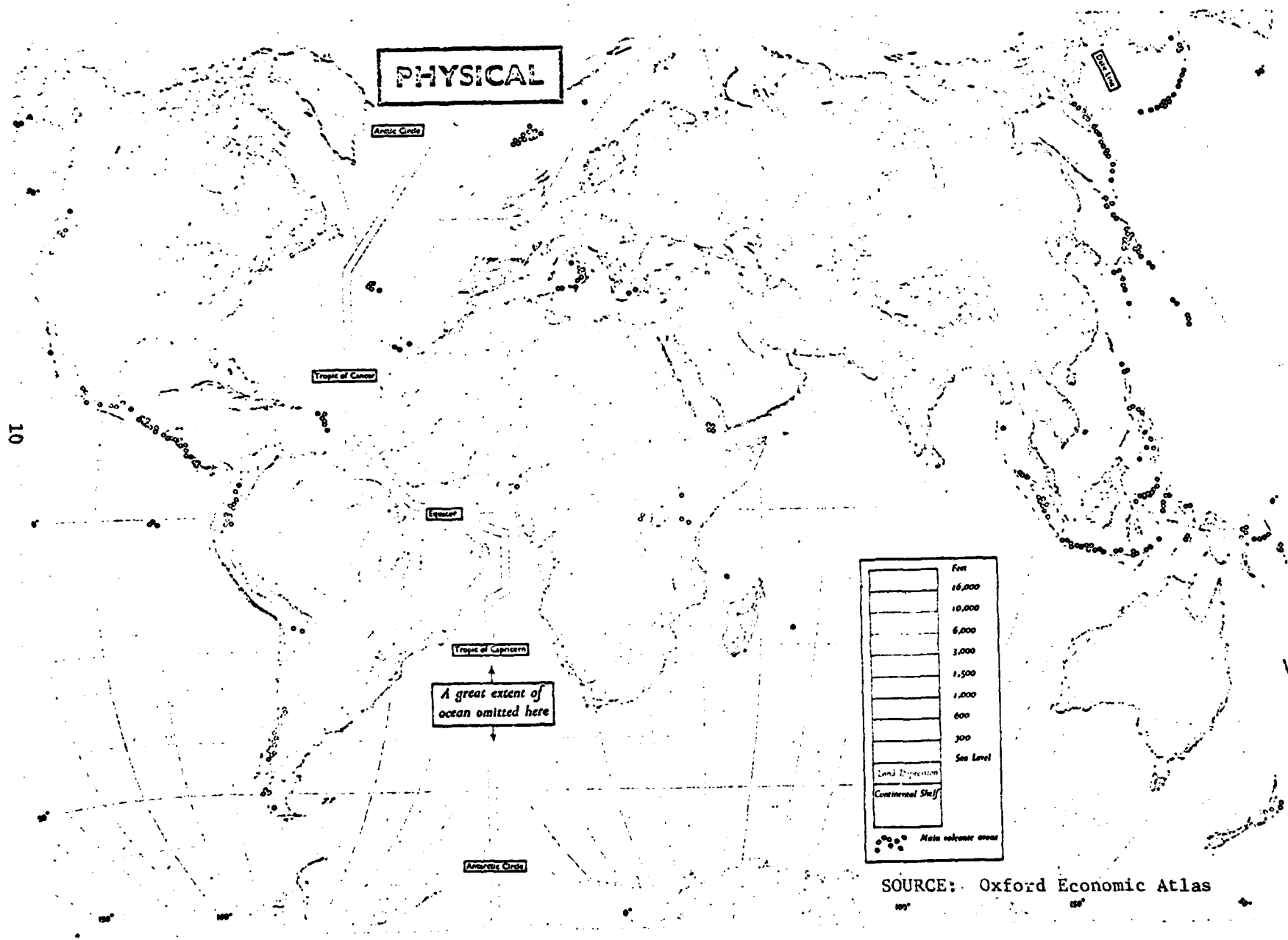
[5]Stanley D. Moss, Thinking Strategically about the Indian Ocean in the 1970's (1970), p. 5.

FIGURE 3



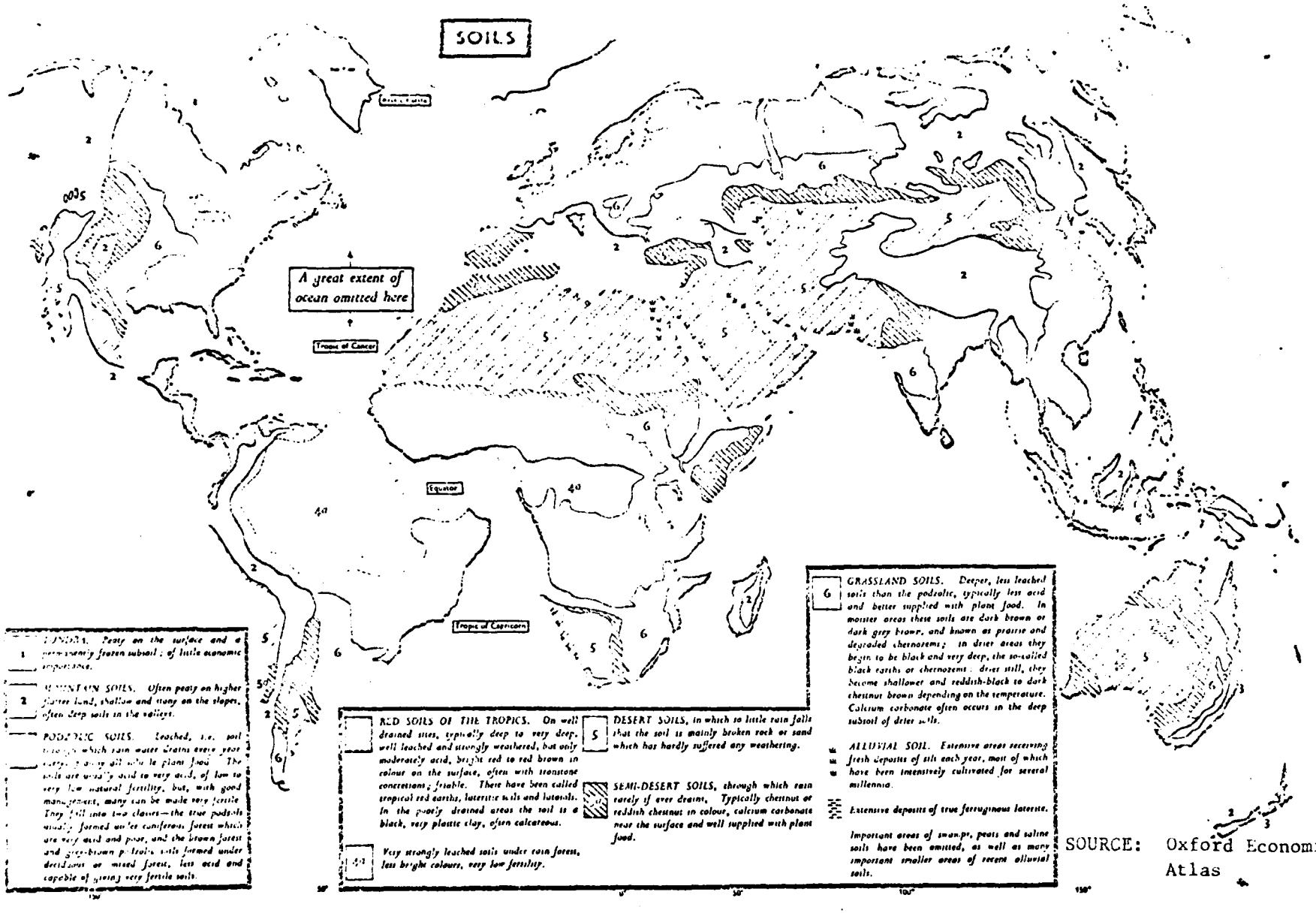

SOURCE: Oxford Economic Atlas

proportion devoted to the grassland soils. Desert soils have experienced little weathering being mainly broken rock or sand. The absence of precipitation has essentially arrested the necessary weathering process. Therefore if abundant water were provided the soil would still be essentially unproductive. The semi-desert soils are, on the other hand, well supplied with plant nutrients. With proper water application these soils are quite productive. Red soils of the tropics are leached and weathered having lost much of their plant food. These soils respond well to fertilization and drainage techniques. The grassland soils are less leached of the necessary plant nutrients, usually less acid, and moderate in natural fertility. With good management, the grassland soils respond well to grain production and improved grazing. Key to the importance of the region's soils is water in the dry areas and fertilizers in the other areas. Without enlightened management little can be expected beyond subsistance agriculture characteristic of most of the rimland. (Figure 4)

## Vegetation

Vegetative response is largely savanna or tropical grassland resulting from lack of sufficient rainfall to support forest vegetation and the sparse vegetation of the hot deserts. Equatorial rain forest is found on the wet west coast of India, the Malay Peninsula, and Indonesia. Rain forest produces teak and rubber, the hot desert limited grazing, and the savanna considerable wet

FIGURE 4




SOURCE: Oxford Economic Atlas

season grazing. The economic value from vegetative resources in the region is limited. Land with-sufficient moisture content is better used for more intensive forms of agriculture. (Figure 5)

## CULTURAL GEOGRAPHY

Cultural geography takes into account the influence of man on the earth's surface. The cultural geography of the Indian Ocean basin is examined by investigating its people, the political geography and its economic geography. A highly generalized summary of the nations follows this section. (Table 1)

### The Population

The demography of the Indian Ocean basin is an example of extremes in population distribution ranging from the sparsely settled Arabian peninsula and West Australia to coastal India and Indonesia that represent some of earth's most populus areas. Similar to the distribution is the era of settlement ranging from biblical times in the area of the Red Sea to Australia with its more recent settlement. Singularly, the peoples of the basin are primarily located on the rimland. This settlement pattern reflects man's nature to inhabit accessable lands and at the lower altitudes[6].

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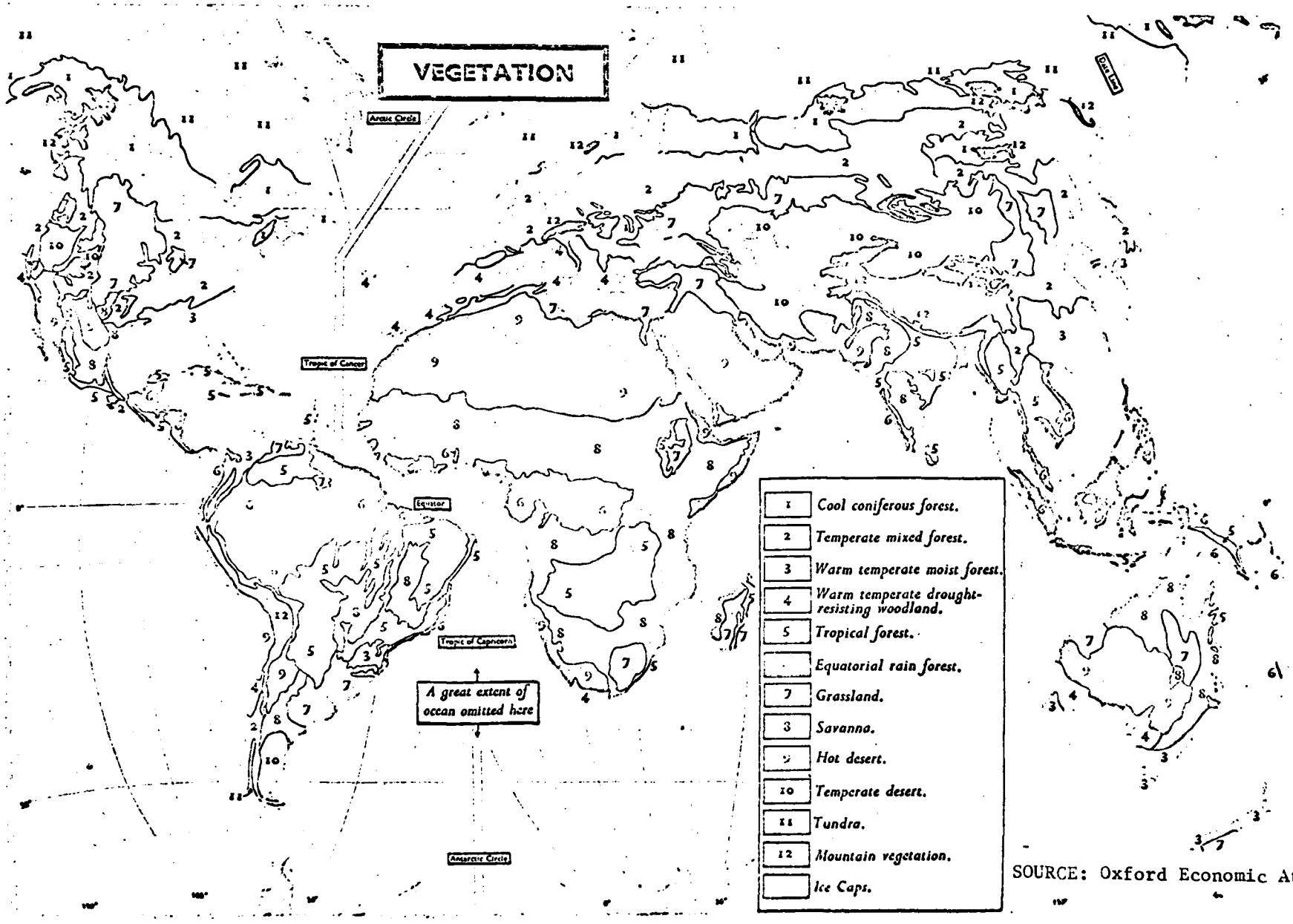
[6]Lawrence A. Hoffman, Economic Geography (1965), p. 77.

FIGURE 5




SOURCE: Oxford Economic Atlas

Mankind's progress toward higher forms of civilization requires a slowing down of present population growth, and the establishment of more favorable interrelationships between the number and quality of people, effective resources, technological advance, and realizable aspirations. It is much more likely that rises in the levels of living will depend upon man's ability to control population growth rather than controlling population distribution. Increased population without an attendant increase in resources is predicted for the Indian Ocean basin.

Ethnic groups play a significant role in this geographic region. The conflict raging in the Middle East and the conditions of unrest in South Asia are rooted in differing opinions traceable to ethnic origin. With exception of a few nodes, the ethnic groups follow a clockwise distribution from the negro of Africa; to Hamite, Semite peoples of the Red Sea area; to the Arabs and Persians of the Arabian Peninsula; to the Indians, Pakistanis, Burmese, Malays, and Chinese of South Asia and Indonesia to the Western European influence of the people of Australia. This array portrays a wide diversion of basic beliefs, including religion, that foretells problems of society, economics, and security reflecting the heterogeneity of the people.

## Political Geography

The political geography of the Indian Ocean basin is as divergent

as its demography. Political stability ranges from the sophisticated governmental machinery of Australia to government by tribal decree experienced in the Trucial States. The majority of governments are in turmoil, several without constitutions or parties, and few with regional alliances[7]. The keynote in the political geography of the region is political fragmentation. Not only are there many small artificially demarcated political entities of speculative viability, but the sense of political community, both within and between neighboring nations is generally lower than in the remainder of the world. Racial, religious and tribal differences feed this situation. The political power will likely remain highly personal for sometime. The rule of law has lost ground and the exercise of personal power without rule of law is almost by definition coercion. Few governments can claim to represent a national concensus. Very few are able to effectively commit their country littorals to approaches by sea or air. There exists a power vacuum of programs for regional or international cooperation[8]. It is important to note that the foreign policy of most nation states is friendly cooperation with the U. S. which indicates the necessity for strategic gamesmanship on the part of the U. S.

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[7]Otis W. Freeman and John W. Morris, World Geography (1965), p. 491.

[8]Moss, pp. 6, 7, 14.

to influence the critical balance, if there is balance, in regional politics.

Boundaries are especially critical. Most interior boundaries are ill-defined and shore and off-shore boundaries impinging on petroleum stores are in dispute[9]. The level and intensity of dispute along with their world-wide ties make the political boundaries a continuing concern for U. S. strategy and international interest in settling these delineations.

## Economic Geography

The abundance of oil reserves stands out to make this region one of great strategic significance. However, internally the region's economy is precarious depicted by low standards of living, populations which are outstripping food supplies, and many nations faced by the crisis of single product or single raw material economic bases[10].

A wide range of economics exist; spanning the gap between oil rich Kuwait with the world's highest percapita income to the poverty of East Pakistan. Only Iran is considered self-sufficient. The key

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[9]Freeman and Morris, p. 491.
[10]Moss, p. 7.

problem to be solved is economic development and modernization. The region is basically a site of European penetration and colonial rule that reflects the ills of supplying the needs of the mother country without due regard to the affected nation.

Oil, agriculture, and limited manufacturing characterize the region's economy. With 63% of the world's proven oil resources, the strategic importance of the rimland is followed closely by the importance of profitable investment[11]. Trade patterns evolve from supplying oil by Indian Ocean tankers to Western Europe and Japan that depend on access and egress routes in and out of the Indian Ocean. Petroleum resources and their transportation will continue to highlight the economic importance of the region. Much of the agriculture is single crop or subsistance farming. Cultivation is restricted to areas of Mediterrean-climate and oases in the dry areas in the west. Oriental rice farming and plantation agriculture dominate the wet littorals of South Asia and cattle and sheep ranching is characteristic of West Australia. (Figure 6) Manufacturing is limited. Oil refining, mineral processing, food processing, and textile manufacturing represent the light industry segment. Little heavy industry exists representing the scarcity of power fuels

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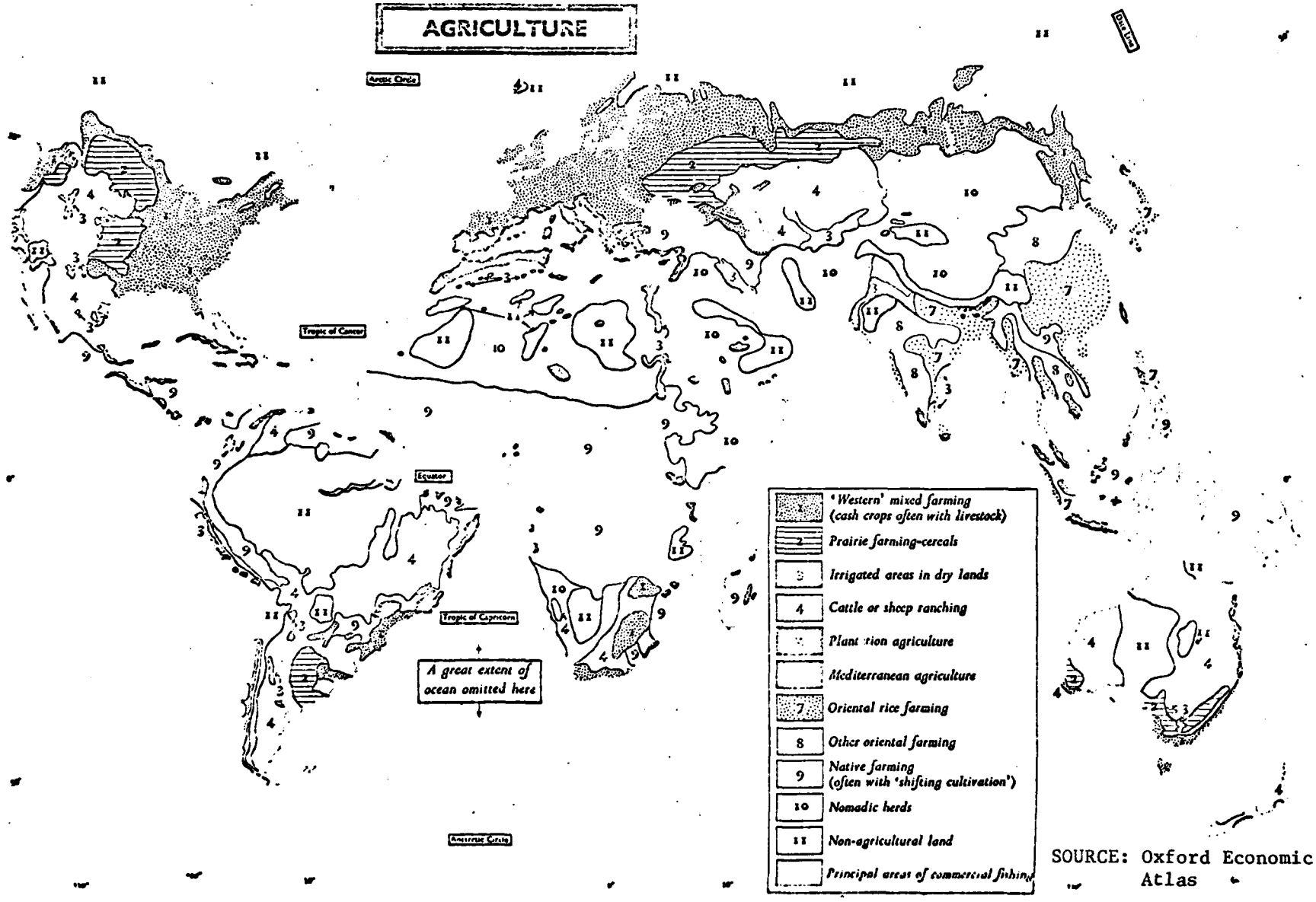
[11]Oxford University, The Shorter Oxford Economic Atlas of the World (1965), p. 58.

FIGURE 6




SOURCE: Oxford Economic Atlas

and the dependence on other areas to provide products of heavy industry[12]. Industrial production will probably spread into these less well developed nations and as a corollary, a rise in living standards can be expected. India and Pakistan are examples of potentially important manufacturing nations[13].

Lines of communication into and within this region are closely tied to its physical and political geography and are of strategic importance in projecting military power into this region. Sea access is dominated by four gates: the Suez Canal, the Strait of Malacca, the Cape of Good Hope and the Tasmanian Sea. Two choke points - the Gulfs of Aden and Oman close off the Red Sea and the Persian Gulf. Control of these passages controls the Indian Ocean-basin since the rimland is sea dependent for both inter and intra area movement of large tonnages[14]. Freedom of access through the control of these passages provides a stragetic advantage in the projection of power politics into this area.

Land transportation routes in the rimland are characterized by short routes to the coast with rapid diminution inland. Exceptions are Southern Africa, Pakistan, and India reflecting the influence

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[12] Ibid., pp. 96-106.
[13] Robert E. Finch, et al., Elements of Geography (1957), p. 617.
[14] Moss, p. 5.

of colonialism. Rail gauge standardization and bridge load limitations are two important factors for consideration when planning for possible utilization of indigenous facilities.

Air access is increasingly important and offers supporting as well as an alternate transport made for projecting power into this region. A serious limitation is the lack of overflight and landing rights over and into land masses not controlled by the U. S. Recent decisions to relegate negotiations for contingency overflight and base rights until the emergency exists or is imminent complicates strategic planning to counter threats in this and other world regions. Because the Indian Ocean has few significant islands, progressive movement of forces and their logistic support through a series of islands is virtually impossible. Diego Garcia is a possibility. Staging base rights arrangements with Great Britain is a solution to the mid-ocean support facility problem[15]. Regardless, use of the air node into the Indian Ocean basin is significant when surface access is controlled by a hostile or uncooperative nation or alliance.

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[15] Ibid, p. 2.

# TABLE 1

## INDIAN OCEAN - RIMLAND NATIONS

| NATION | CAPITAL/(PORT) | ECONOMY | PEOPLE-RELIGION | POLITICS | FGN POLICY TOWARD U.S. |
|---|---|---|---|---|---|
| South Africa | Capetown (Durban) | Manf-Mnl prod | Neg - Christian | Ind Repub; Pres; PM; Const. | Apartheid; Friendly Coop |
| Mozambique (Port) | Lourengo Margues (same) | Ag - Cashews | Neg - Animist | Port O'seas province; Gov Gnl | Friendly Coop |
| Malagasy Republic | Tananarive (Tamatave) | Ag - Rice | Neg-Arab-Animist | Strong President; Bicam; stable | Pro west - anti com |
| Tanzania | Dar es Salaam (same) | Ag - Sisal | Neg - Islam | Ind Repub (Br CW); Unicam | Friendly Coop |
| Kenya | Nairobi (Mombasa) | Manf - Ag processing | Neg - Animist | Ind Dom (Br CW); Pres. Natl Assy; Unicam | Friendly Coop |
| Somalia | Mogadishu (same) | Ag - Livestock | Hamitic (Nomand)-Islam | Demo - Islamic Law; nonalignment | Friendly Coop |
| Afars and Issas (Fr) | Djibouti (same) | Ag - Livestock | Hamitic (Nomad)-Islam | Fr O'seas province; Hi-comsr | Friendly Coop |
| Ethopia | Addis Ababa (Djibouti) | Ag - Coffee | Semitic-Cushitic Christian-Islam | Hereditary monarchy; Nonalignment | Friendly Coop |
| Sudan | Khartoum (Port Sudan) | Ag - Cotton | Neg - Islam Arab Nubian | Chmn Rev Council; Intl Const | Severed 1967 |
| Egypt | Cairo (Alexandria) | Manf - Textiles | Hamitic - Islam | Pres, Natl Assy | Pro Com |
| Israel | Jerusalem/Tel Aviv (Jaffa) | Manf - Ag processing | Semitic - Judaism | Pres, PM no Const; Unicam | Close Coop |
| Saudi Arabia | Riad (Jidda) | Min - Oil | Arab - Islam | Ind monarchy; No parties | Friendly Coop |
| Yemen | Sana (Mocha) | Ag - Qat | Semitic - Islam | Unsettled - Pres/ Cabinet; Tribal | Pro UAR; Severed 1967 |

SOURCE: Background Notes, Dept of State
The World Almanac

TABLE 1 (cont)

| NATION | CAPITAL/(PORT) | ECONOMY | PEOPLE-RELIGION | POLITICS | FGN POLICY TOWARD U.S. |
|---|---|---|---|---|---|
| Southern Yemen | Madinat-al-Shaab (Aden) | Manf - Cotton (oil ref) | Arab - Islam | Presidental Council Nonalignment No const | Com oriented; Severed 1969 |
| Muscat and Oman | Muscat/Aden (Muscat) | Min - Oil | Arab - Islam | Absolute monarchy; no parties, const, or legis | Friendly coop |
| Trucial States | Dubai (Dubai) | Min - Oil | Arab - Islam | Tribal decree (GB conducts foreign affairs) | Friendly coop |
| Qatar | Doha (Umm Said) | Min - Oil | Arab - Islam | Ruler; no legis; parties stable | Friendly coop |
| Bahrein | Manamah (same) | Oil - Trade | Arab - Islam | Hereditary Council of State; Pres | Friendly coop; home port for MIDEASTFOR |
| Kuwait | Kuwait (Kuwait) | Min - Oil (highest PCI) | Arab - Islam | Hereditary process of parlimentary law | Pro Arab; Friendly coop |
| Iraq | Baghdad (Basra) | Oil - Min | Arab - Islam | Armed Forces; no parties; const | Pro Arab; Severed 1967 |
| Iran | Teheran (Basra) | Ag - Self Suff | Persian - Islam | Intense nationalism Non Com; Const mon | Pro West; Close relations |
| W. Pakistan | Karachi (Karachi) | Az - Jute | Pak - Islam | Pres, Const govt | Peace; freedom; & development; reduce defense spending |
| India | Delhi (Calcutta) | Ag - Rice | Indians - Hindu | Severe govt, demo republic | Friendly Coop |
| E. Pakistan | Dacca (Chittagong) | Ag - Jute | Pak - Islam | Pres - const govt | Peace; freedom; development; reduce defense spending |

TABLE 1 (cont)

| NATION | CAPITAL/(PORT) | ECONOMY | PEOPLE-RELIGION | POLITICS | FGN POLICY TOWARD U.S. |
|---|---|---|---|---|---|
| Burma | Rangoon (Rangoon) | Trade - Rice | Burmese - Bud | Chmn Rev Council; Parl | Friendly coop & anti-com |
| Malaysia | Kuala Lumpur (Penang) | Ag - Rubber | Malays - Islam | Paramount Ruler; Const; Parl | Friendly coop & anti com |
| Singapore | Singapore (same) | Entrepot trade | Chinese - Islam | Rep Pres; Parl. | Non-alignment |
| Indonesia | Djakarta (same) | Min - Tin | Malays-Islam | Pres; Parl; Const Assy | Close coop |
| Ceylon | Colombo (same) | Ag - Tea | Sinhalese - Bud | Queen GB, Gov Gen & Parl, non-align | Moving away fr West; friendly relations |
| Australia | Canberra (Sydney) | Ag - Wool/Meat | (Br) Aust - Christian | PM, Parl | Close Coop |

## MILITARY CONCLUSIONS

1. An understanding of the geographic element of power is basic to an appreciation of the strategic importance of the region.

2. The cultural geography cannot be appreciated without fully understanding the physical geography of the basin.

3. Strategy in an extensive oceanic environment such as this does not involve control of the sea itself, but specific points of importance in or around it. Most importantly, strategy involves sea and air access to, and routes between nations for purposes of trade or acquisition of supplies, or the movements of military forces, or maintaining communications. It involves also the freedom to conceal in the sea, attack weapons such as Polaris type submarines. It has begun to involve competition for control of the ocean bed and its resources.

4. Dominance of the world's petroleum supply and nationalism are basic causes for tension and political fragmentation.

5. General poverty and a precarious economy faced by the crisis of a single product or raw material resource base increases the tensions of maintaining peace and order.

6. A power vacuum of law and order and few programs for regional or international cooperation makes this region ripe for influence by nations more powerful than the target nation.

7. Western power is acceptable but not particularly welcome at this time.

## RECOMMENDATIONS

The U. S. should:

1. Maintain an influence through application of cultural resources. (Short range)

2. Provide minimum military assistance. (Short range)

3. Insure no single nation has a dominant position over any other nation. (Short and medium range)

4. Increase emphasis on the strategic importance of the Indian Ocean basin. (Medium range)

GENE A. WEAVER
LTC AR

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