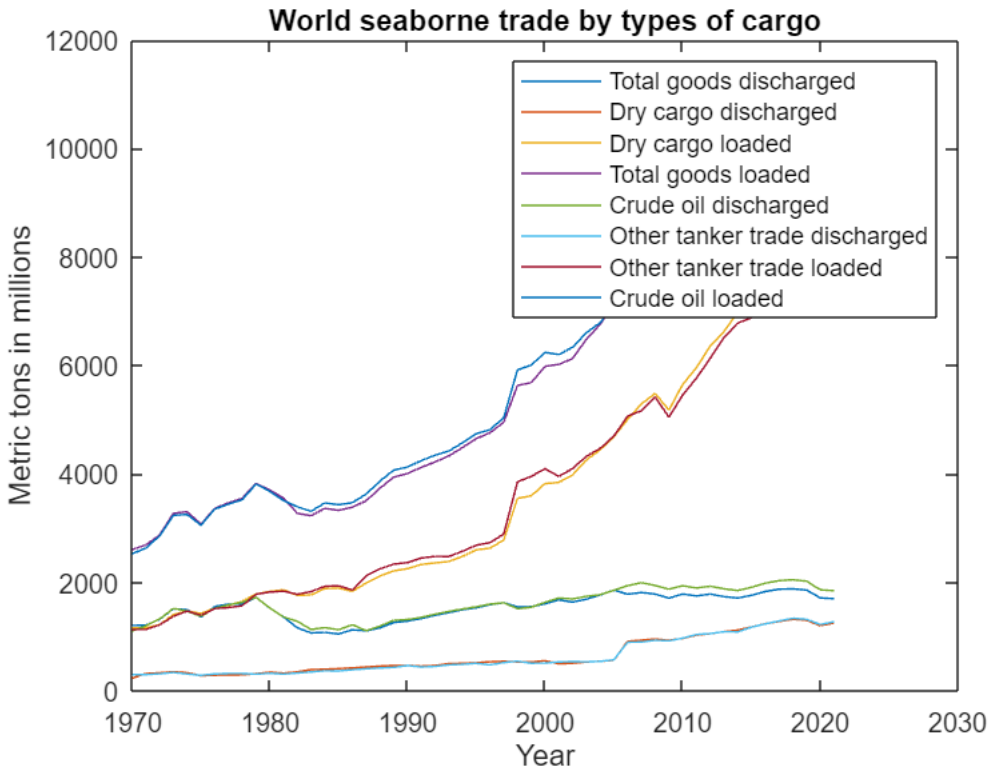
ANALISIS DEL COMERCIO MARÍTIMO MUNDIAL

```
% Read the Excel file into a table
T = readtable('transp1.xlsx');
```

```
Warning: Column headers from the file were modified to make them valid MATLAB identifiers before creating
variable names for the table. The original column headers are saved in the VariableDescriptions property.
Set 'VariableNamingRule' to 'preserve' to use the original column headers as table variable names.
```

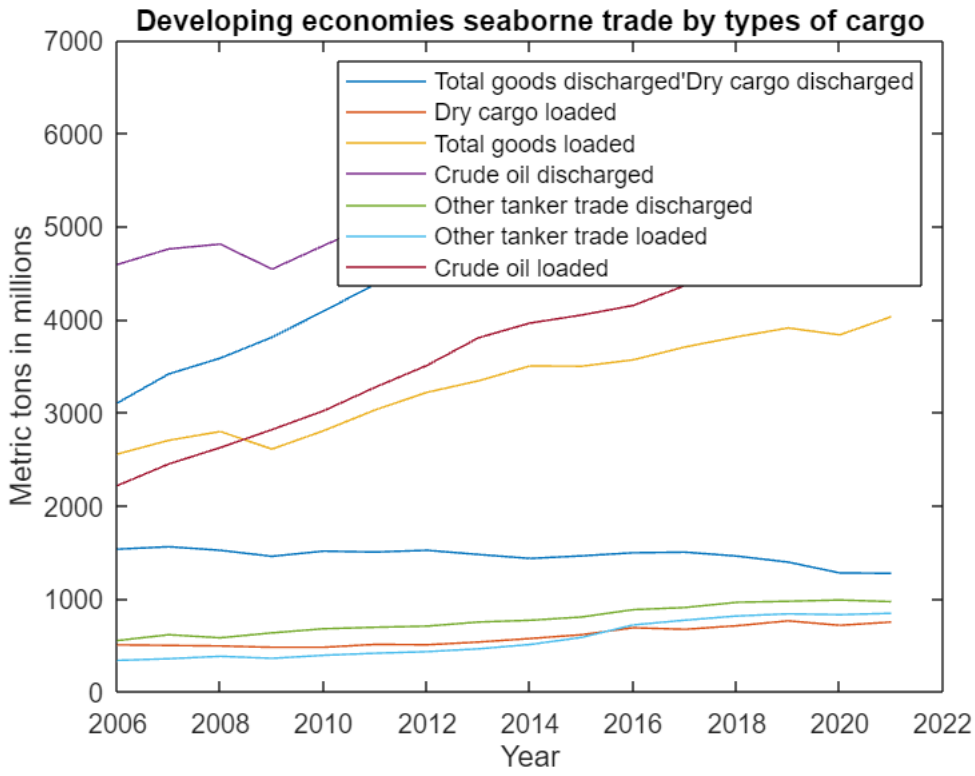
Graficas comercio maritimo

```
Comercio_maritimo_mundial_por_tipos_de_carga = table2array(T(1:8,3:end));
t=1970:2021;

plot(t,Comercio_maritimo_mundial_por_tipos_de_carga')

legend('Total goods discharged','Dry cargo discharged','Dry cargo loaded','Total
goods loaded','Crude oil discharged','Other tanker trade discharged','Other tanker
trade loaded','Crude oil loaded')
title("World seaborne trade by types of cargo")
xlabel("Year")
ylabel("Metric tons in millions")
```

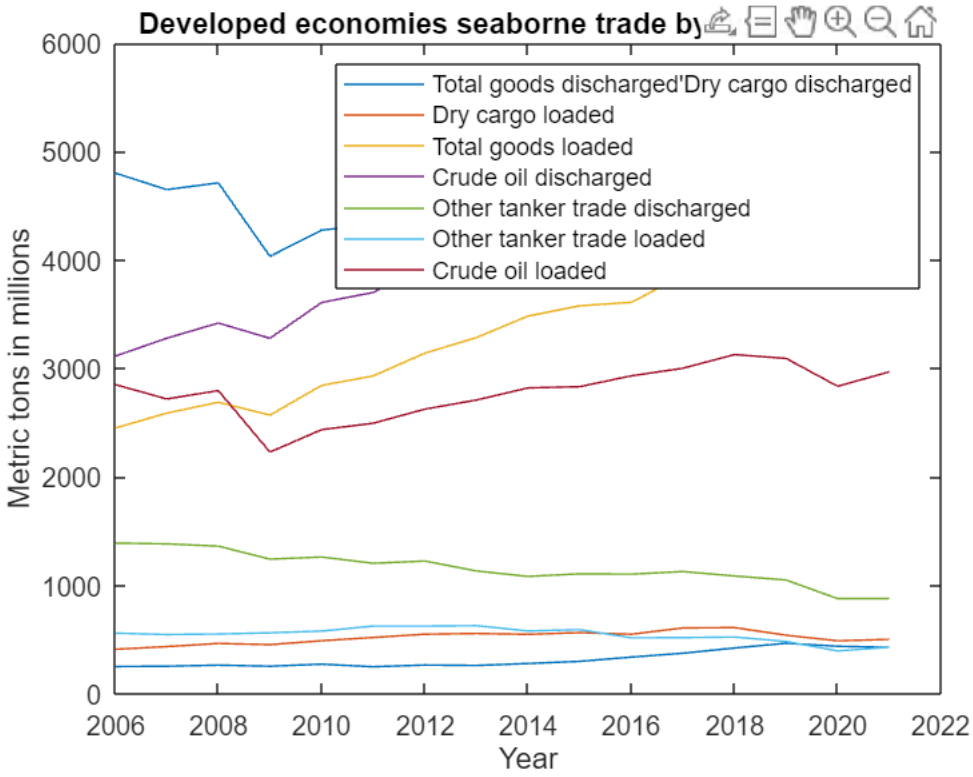



```
Comercio_maritimo_ecdesarrollandose = table2array(T(73:80,39:end));
t1=2006:2021;
plot(t1,Comercio_maritimo_ecdesarrollandose')
```

```
legend('Total goods discharged''Dry cargo discharged','Dry cargo loaded','Total
goods loaded','Crude oil discharged','Other tanker trade discharged','Other tanker
trade loaded','Crude oil loaded')
title("Developing economies seaborne trade by types of cargo")
xlabel("Year")
ylabel("Metric tons in millions")
```

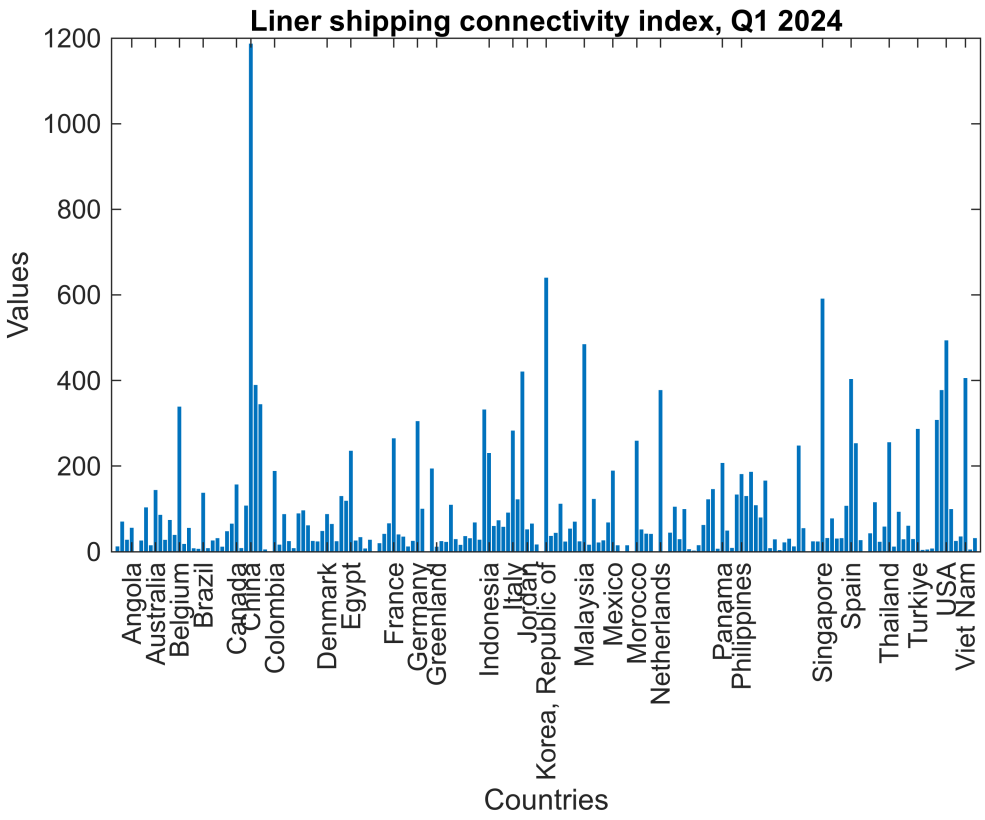



```
Comercio_maritimo_ecdesarrollandas = table2array(T(121:128,39:end));
t1=2006:2021;
plot(t1,Comercio_maritimo_ecdesarrollandas')

legend('Total goods discharged''Dry cargo discharged','Dry cargo loaded','Total
goods loaded','Crude oil discharged','Other tanker trade discharged','Other tanker
trade loaded','Crude oil loaded')
title("Developed economies seaborne trade by types of cargo")
xlabel("Year")
ylabel("Metric tons in millions")
```



Grafica Indice de conectividad de paises

```
clf
bar(U)
% Personalizar el gráfico
xlabel('Countries')
ylabel('Values')
title('Liner shipping connectivity index, Q1 2024')
vector = [4, 9, 14, 19, 26, 29, 34, 45, 50, 59, 64, 68, 79, 84, 87, 91, 99, 105,
110, 115, 128,132, 149, 155, 163, 169, 175, 179];
Paises(115)="Netherlands";
Paises(175)="USA";
xticks(vector)
xtickangle(90)
xticklabels(Paises(vector)) % Etiquetas de las categorías en el eje x
```

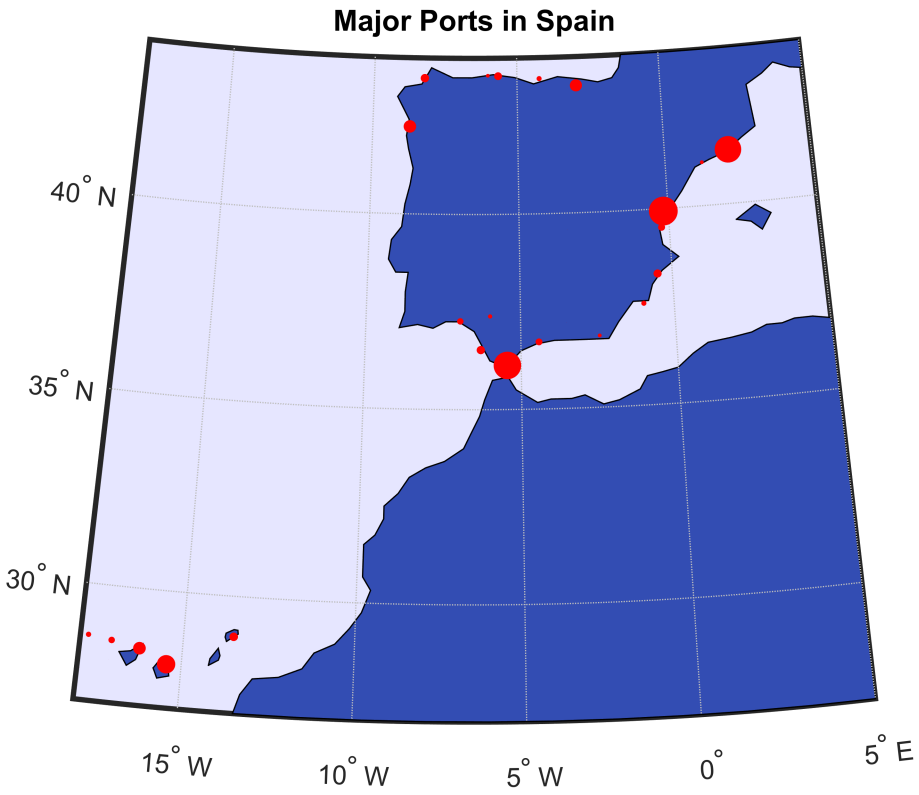



```
[valores_ordenados, indices_ordenados] = sort(U, 'descend');
valores_ordenados(12:end);
indices_ordenados(12:end);
%España es 8o pais con mejor conectividad
```

Grafica Mayor puertos de españa

```
%pie(Pesp)
% Coordinates of the ports in Spain
lat = [36.1296, 38.3467, 36.8365, 28.9637, 43.5541, 41.3851, 43.2627, 36.5271,
37.6058, 39.9756, 35.8884, 43.4824, 38.9675, 43.5407, 37.2614, 43.3623, 28.1236,
36.7202, 42.2168, 35.0014, 37.1921, 39.5696, 43.3193, 28.6052, 39.523, 28.0943,
28.6835, 28.4682, 43.4623, 37.3886, 41.1114, 39.9334, 27.8095, 42.2389, 42.2643];
lon = [-5.4416, -0.4829, -2.4611, -13.5377, -6.0224, 2.1734, -2.9376, -6.2886,
-0.9862, -0.0616, -5.3176, -8.2319, -0.1781, -5.6615, -6.9498, -8.4115, -15.435,
-4.4179, -8.703, -3.5797, -3.5179, -3.3935, -8.5253, -17.0773, -0.2566, -17.1134,
-17.7647, -16.2485, -4.2207, -5.9845, 1.249, -0.164, -17.9147, -8.7207, -8.7226];
tamanos = (Pesp/sum(Pesp))*550; % Defining a size of 10 for the port markers

% Definir las coordenadas de España
latlim = [27 44]; % Latitud desde el extremo sur de las Islas Canarias hasta el
extremo norte de la Península Ibérica
lonlim = [-18 5]; % Longitud desde el extremo oeste de las Islas Canarias hasta el
extremo este de la Península Ibérica
```

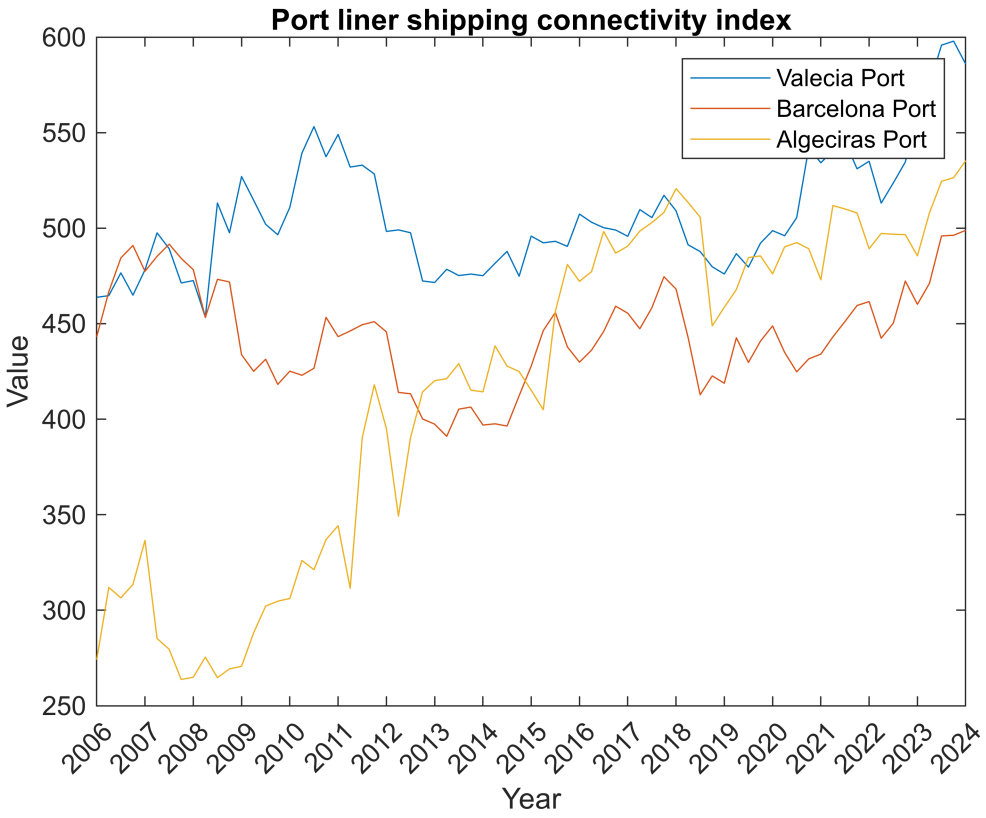
```
load coastlines
% Crear el gráfico geográfico limitado a España, incluyendo las Islas Canarias
figure;
ax = worldmap(latlim, lonlim);

% Establecer colores de fondo para el mar y la tierra
landColor = [0.2 0.3 0.7]; % Color para la tierra
seaColor = [0.9 0.9 1]; % Color para el mar (azul claro)

% Mostrar el mapa con colores de fondo diferenciados para tierra y mar
setm(ax, 'FFaceColor', seaColor); % Establecer color de fondo para el mar
geoshow(ax, coastlat, coastlon, 'DisplayType', 'polygon', 'FaceColor', landColor);
% Mostrar la tierra
scatterm(lat, lon, tamanos+0.01,'red ','filled');


% % Adding a title and labels
 title('Major Ports in Spain');
 xlabel('Longitude');
 ylabel('Latitude');
```



Grafica crecimiento puertos de España

```
clf
%Pvlc=p1
%Pbarc=p1
```

```
%Palg=p1
t=2006:0.25:2024;

years=2006:2024;
% Crear el gráfico
figure;
plot(t, [Pvlc;Pbarc;Palg]');
xlabel('Year');
ylabel('Value');
legend('Valecia Port', 'Barcelona Port', 'Algeciras Port');
title('Port liner shipping connectivity index')
% Establecer los marcadores del eje x para mostrar solo un año por cada año real
xticks(2006:1:2024);
```



Grafica de toneladas de peso de los barcos por tipo de barco

```
T = readtable('MerchantFleet.xlsx');
```

```
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```
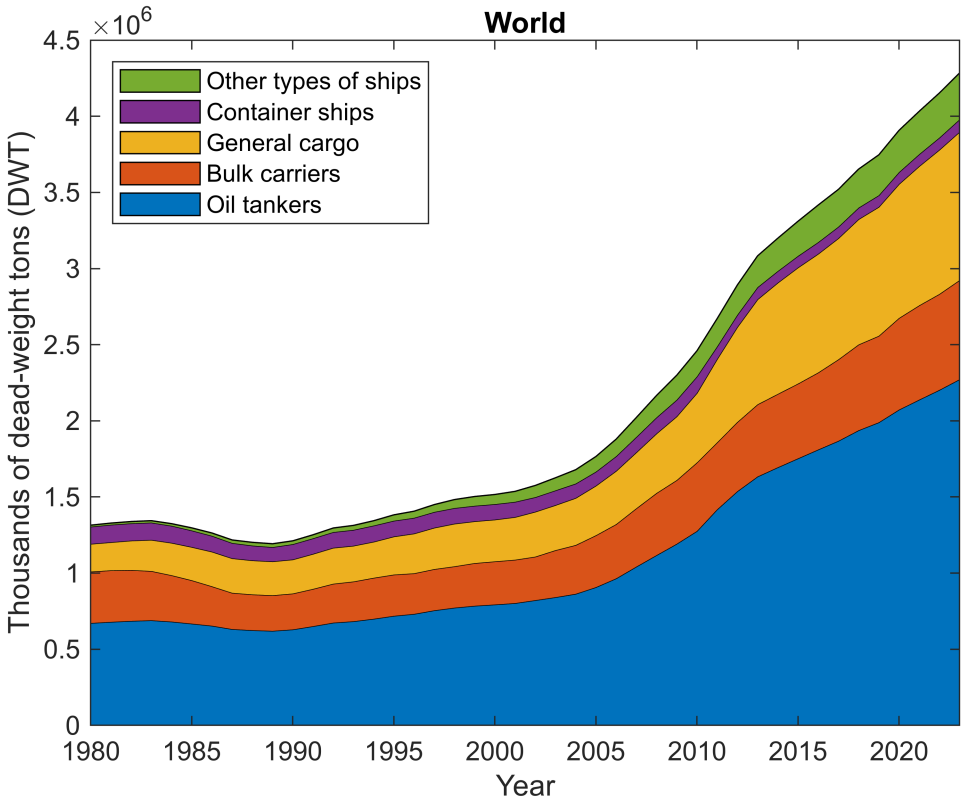
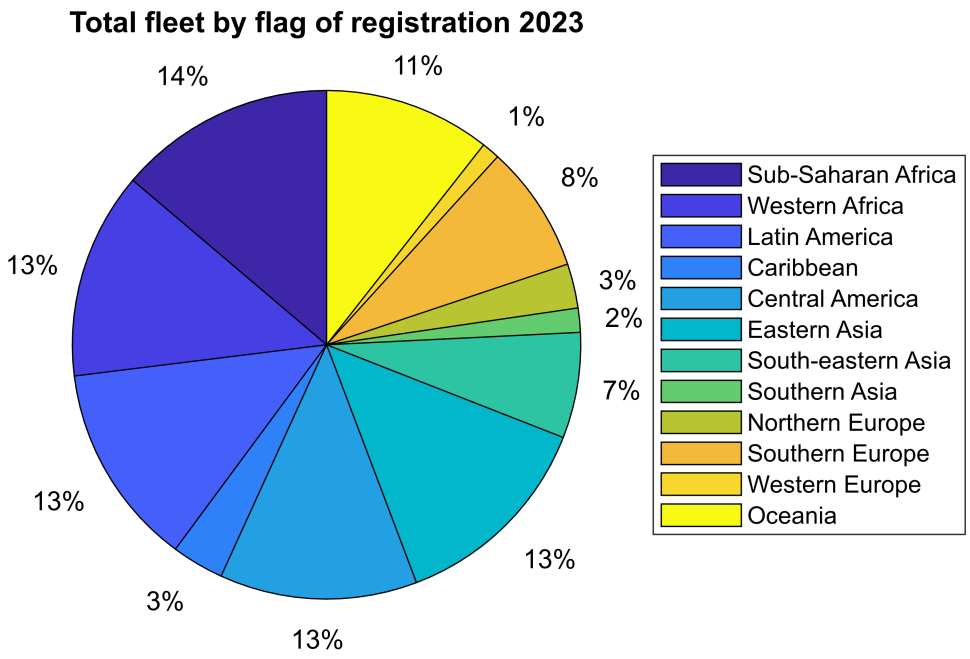

```
datos = table2array(T(7:end,3:end-2));
t=1980:2023;
area(t,datos(1:5,1:end)')
title('World')
xlim([1980,2023])
```

```
legend(T{8:12,2}, 'Location', 'northwest')
xlabel("Year")
ylabel("Thousands of dead-weight tons (DWT)")
```



Barcos registrados por zonas geograficas

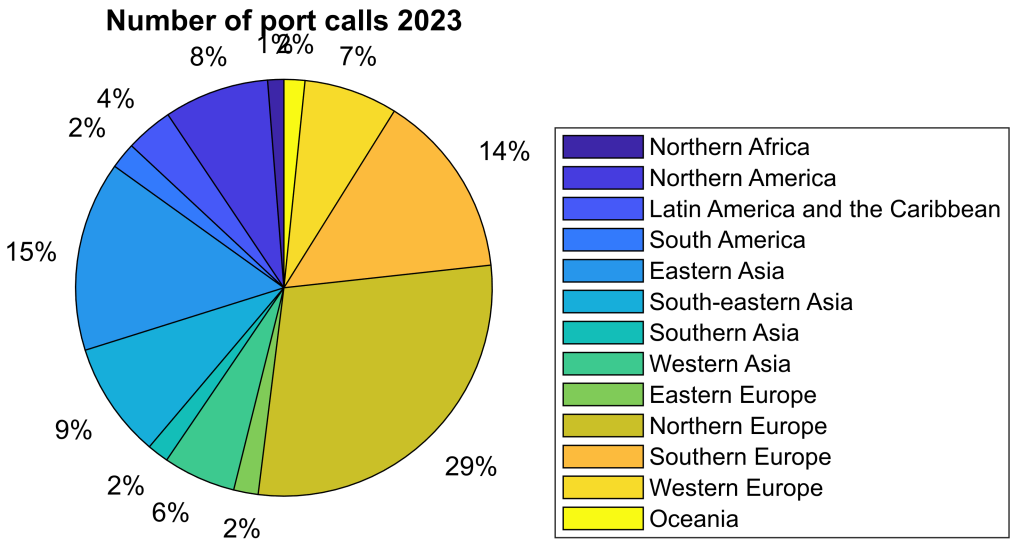
```
tabla = table2array(T(7:end, 1:2));
tarta=[];
leyenda=[];
nuevos_valores_leyenda = {'Latin America', 'Caribbean'};
for i=[19:24 43:48 61:66 73:78 97:114 133:156] %filas de datos que nos interesan
    if strcmp(tabla{i, 2}(1:5), 'Total')
        if length(tarta)==2
            tarta=[tarta 381553 98394];
            leyenda{3} = nuevos_valores_leyenda{1};
            leyenda{4} = nuevos_valores_leyenda{2};
        else
            tarta=[tarta datos(i,end)];
            leyenda=[leyenda; T{i+6, 1}];
        end
    end
end
pie(tarta)
legend(leyenda, 'Location', 'eastoutside')
title('Total fleet by flag of registration 2023')
```



Parada de los barcos en sus trayectos

```
opts = spreadsheetImportOptions("NumVariables", 12);

% Specify sheet and range
opts.Sheet = "US.PortCallsArrivals_20240526_1";
opts.DataRange = "A1:L65";

% Specify column names and types
opts.VariableNames = ["Economy_Label", "AllShips_Number_of_port_calls_Value",
"LiquidBulkCarriers_Number_of_port_calls_Value",
"LiquefiedPetroleumGasCarriers_Number_of_port_calls_Value",
"LiquefiedNaturalGasCarriers_Number_of_port_calls_Value",
"DryBulkCarriers_Number_of_port_calls_Value",
"DryBreakbulkCarriers_Number_of_port_calls_Value",
"RollonRolloffShips_Number_of_port_calls_Value",
"ContainerShips_Number_of_port_calls_Value",
"PassengerShips_Number_of_port_calls_Value", "VarName11", "VarName12"];
opts.VariableTypes = ["string", "double", "double", "double", "double", "double",
"double", "double", "double", "double", "double", "double"];

% Specify variable properties
opts = setvaropts(opts, "Economy_Label", "WhitespaceRule", "preserve");
opts = setvaropts(opts, "Economy_Label", "EmptyFieldRule", "auto");
```

```
% Import the data
R = readtable("PortCallsArrivals.xlsx", opts, "UseExcel", false);
r = table2array(R(3:end,2:end-2));
tarta=[];
leyenda=[];
for i=[3 10:11 14 17:20 22:26] %filas de datos que nos interesan
    tarta=[tarta r(i,1)];
    leyenda=[leyenda; R{i+2, 1}];
end
pie(tarta)
legend(leyenda, 'Location', 'southeastoutside')
title('Number of port calls 2023')
```



Grafica crecimiento puertos mas importantes de españa con datos anuales

```
anos=2006:2023;
anosq=2006:0.25:2024;
Palg=[274.080000000000    311.910000000000    306.510000000000
313.520000000000    336.590000000000    285.200000000000    279.550000000000
263.760000000000    264.950000000000    275.450000000000    264.700000000000
269.310000000000    270.640000000000    288.160000000000    302.200000000000
304.730000000000    306.140000000000    326.070000000000    321.210000000000
337    344.250000000000    311.480000000000    390.270000000000
418.050000000000    395.190000000000    349.230000000000    390.370000000000
414.340000000000    420.150000000000    421.230000000000    429.110000000000
415.200000000000    414.300000000000    438.410000000000    427.780000000000
```

```
424.950000000000    415.200000000000    404.940000000000    456.480000000000
481.030000000000    472.150000000000    477.240000000000    498.270000000000
486.910000000000    490.580000000000    498.470000000000    502.930000000000
508.230000000000    520.680000000000    513.490000000000    505.760000000000
448.850000000000    458.610000000000    467.870000000000    484.600000000000
485.480000000000    476.020000000000    490.220000000000    492.430000000000
489.230000000000    472.990000000000    511.830000000000    510.040000000000
507.940000000000    489.250000000000    497.220000000000    496.820000000000
496.600000000000    485.520000000000    507.990000000000    524.560000000000
526.410000000000    535.320000000000];
Pbarc=[443.160000000000    466.710000000000    484.430000000000
490.920000000000    477.420000000000    485.280000000000    491.640000000000
484.180000000000    478.260000000000    453.220000000000    473.210000000000
471.830000000000    433.770000000000    425.060000000000    431.410000000000
418.220000000000    425.150000000000    422.980000000000    426.650000000000
453.320000000000    443.200000000000    446.190000000000    449.450000000000
451.040000000000    445.700000000000    414.010000000000    413.300000000000
400.110000000000    397.390000000000    391.030000000000    405.260000000000
406.350000000000    396.940000000000    397.580000000000    396.420000000000
412.260000000000    427.820000000000    446.380000000000    455.910000000000
437.830000000000    429.840000000000    436.150000000000    445.880000000000
459.150000000000    455.470000000000    447.340000000000    458.330000000000
474.580000000000    468.140000000000    442.810000000000    412.780000000000
422.680000000000    418.810000000000    442.620000000000    429.700000000000
440.880000000000    448.840000000000    434.950000000000    424.780000000000
431.580000000000    434.070000000000    443.090000000000    451.150000000000
459.510000000000    461.590000000000    442.380000000000    450.220000000000
472.330000000000    460.130000000000    471.100000000000    495.930000000000
496.280000000000    498.840000000000];
Pvlc=[463.800000000000    464.670000000000    476.610000000000
464.920000000000    478.210000000000    497.540000000000    489.280000000000
471.290000000000    472.550000000000    453.400000000000    513.180000000000
497.580000000000    527.020000000000    514.640000000000    501.990000000000
496.550000000000    510.890000000000    539.240000000000    553.170000000000
537.390000000000    549.050000000000    531.980000000000    532.980000000000
528.360000000000    498.290000000000    499.080000000000    497.600000000000
472.340000000000    471.570000000000    478.470000000000    475.190000000000
475.960000000000    475.120000000000    481.590000000000    487.840000000000
474.830000000000    495.830000000000    492.320000000000    493.120000000000
490.460000000000    507.350000000000    503.090000000000    500.250000000000
499.010000000000    495.740000000000    509.690000000000    505.530000000000
517.210000000000    509.090000000000    491.290000000000    487.740000000000
479.790000000000    475.990000000000    486.670000000000    479.600000000000
492.170000000000    498.700000000000    496.010000000000    505.510000000000
542.130000000000    534.220000000000    540.590000000000    545.340000000000
531.080000000000    535.010000000000    513.090000000000    523.620000000000
534.640000000000    561.530000000000    575.250000000000    595.790000000000
597.900000000000    585.900000000000];
k=0;
for i=[1:4:length(Palg)-1]
```

```
    k=k+1;
    Palg_mean(k)=mean(Palg(i:i+4));
    Pvlc_mean(k)=mean(Pvlc(i:i+4));
    Pbarc_mean(k)=mean(Pbarc(i:i+4));
end
plot(anos,[Pvlc_mean;Pbarc_mean;Palg_mean])
legend('Valencia Port', 'Barcelona Port', 'Algeciras Port')
title('Port linear shipping connectivity index')
ylabel('Value')
```