

Banco de Dados - abióticos



PostgreSQL

PostgreSQL + PostGIS




PESQUISAS ECOLÓGICAS
DE LONGA DURAÇÃO

O que é um Banco de dados?

Conjunto de dados integrados que tem por objetivo atender a uma comunidade de usuários.



BD próprio

- controle e atualização cte;
 - integridade dos dados;
 - diferentes níveis de acesso;
 - integração com outros dados;
 - dados abióticos (<>GBIF)
- 

DB-Engines Ranking

350 systems in ranking, July 2019 ← Oracle

| Rank | Rank | | DBMS | Database Model | Score | | |
|------|-----------------------------------------|----------|------------------------------------------------------------|----------------------------------------------------------------|----------|----------|----------|
| | Jun 2019 | Jul 2018 | | | Jul 2019 | Jun 2019 | Jul 2018 |
| 1. | 1. | 1. | Oracle + | Relational, Multi-model i | 1321.26 | +22.04 | +43.47 |
| 2. | 2. | 2. | MySQL + | Relational, Multi-model i | 1229.52 | +5.89 | +33.45 |
| 3. | 3. | 3. | Microsoft SQL Server + | Relational, Multi-model i | 1090.83 | +3.07 | +37.42 |
| 4. | 4. | 4. | PostgreSQL + | Relational, Multi-model i | 483.28 | +6.65 | +77.47 |
| 5. | 5. | 5. | MongoDB + | Document | 409.93 | +6.03 | +59.60 |
| 6. | 6. | 6. | IBM Db2 + | Relational, Multi-model i | 174.14 | +1.94 | -12.06 |
| 7. | ↑ 8. | 8. | Elasticsearch + | Search engine, Multi-model i | 148.81 | -0.01 | +12.59 |
| 8. | ↓ 7. | 7. | Redis + | Key-value, Multi-model i | 144.26 | -1.86 | +4.35 |
| 9. | 9. | 9. | Microsoft Access | Relational | 137.31 | -3.70 | +4.73 |
| 10. | 10. | 10. | Cassandra + | Wide column | 127.00 | +1.82 | +5.95 |
| 11. | 11. | 11. | SOLite + | Relational | 124.63 | -0.26 | +9.35 |

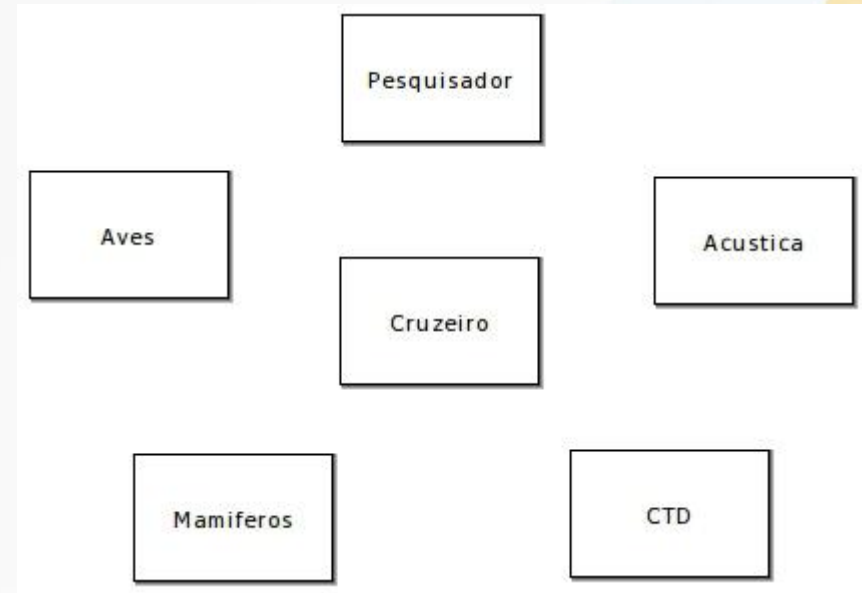


- ← Oracle
- + CouchDB
- ↑ InfluxDB
- ↓ Spark SQL
- i 1/12 ▼

Click at a system in th

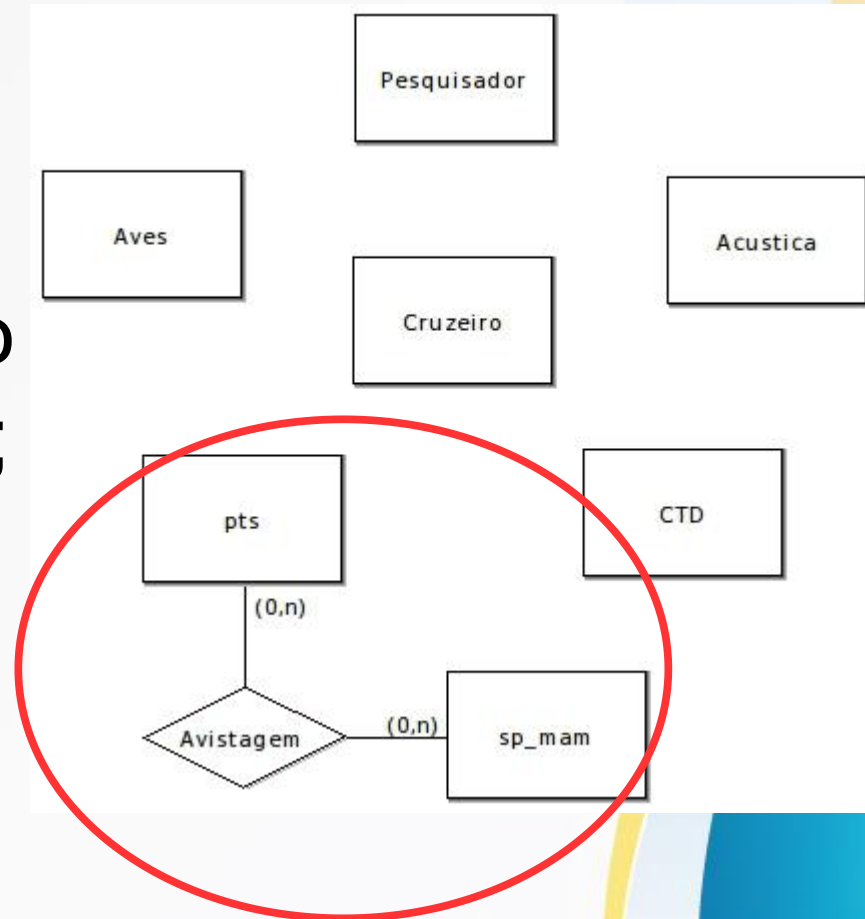
Modelo Conceitual

- Alto nível de abstração;

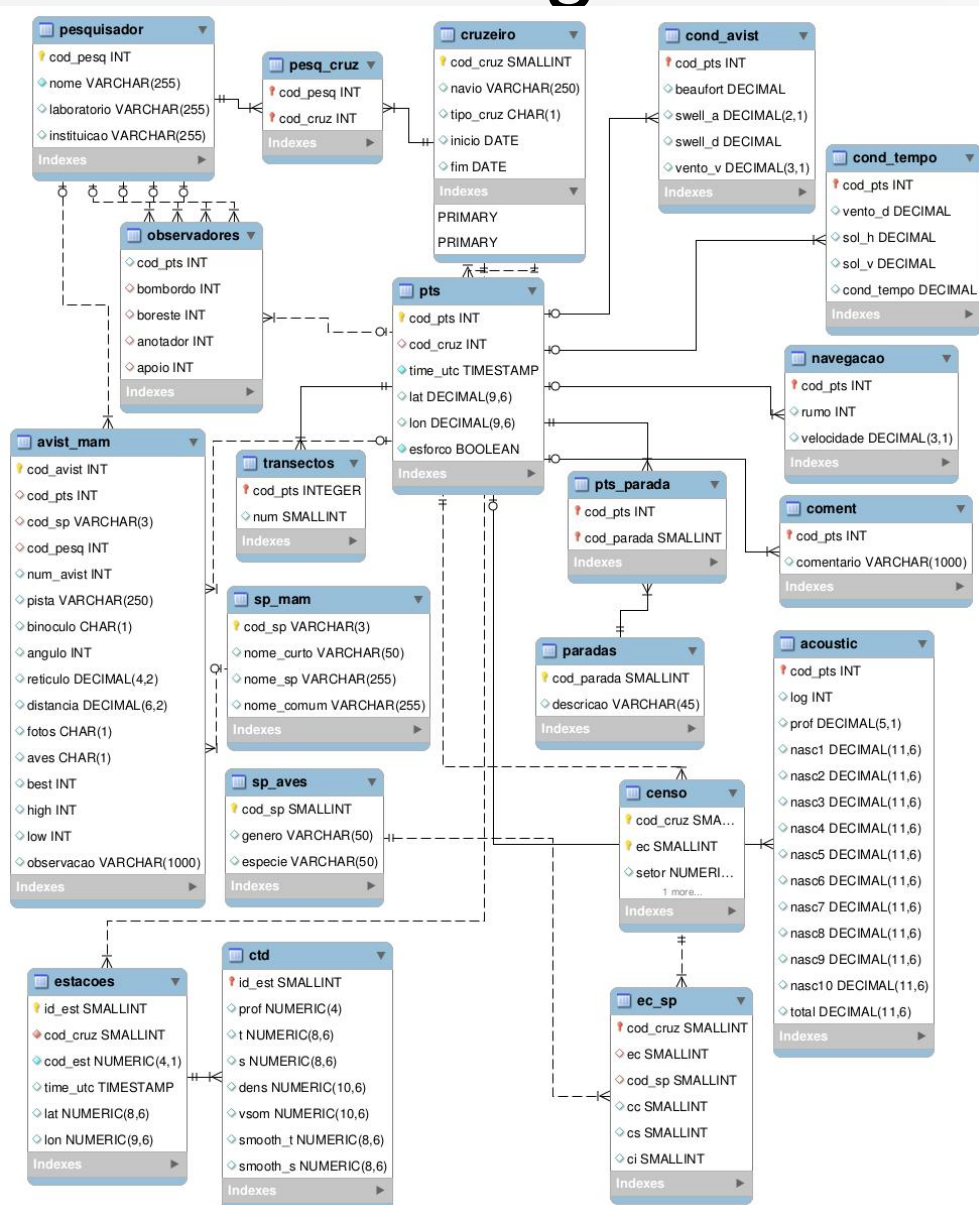


Modelo Conceitual

- Alto nível de abstração;
- Evolução do modelo a partir do conhecimento que se tem dos dados;



Modelo Lógico



- Tabelas
- Atributos
- Relacionamentos
- Restrições
 - Tipos de dados
 - Chaves-primárias
 - Chaves estrangeiras

| eventID | eventDate | locality | waterBody | habitat | SamplingProtocol | decimalLatitude | decimalLongitude |
|---------------------------------------------------|------------|---------------------|----------------------|---------|---------------------|-----------------|------------------|
| BR:peld:furg:patos:PELD_ELPA:1998:1:1:MARINHEIROS | 1998-01-01 | Porto Rei embayment | Patos Lagoon estuary | estuary | 1e same time (10 am | -32.01 | -52.13 |
| BR:peld:furg:patos:PELD_ELPA:1998:1:2:MARINHEIROS | 1998-01-02 | Porto Rei embayment | Patos Lagoon estuary | estuary | 1e same time (10 am | -32.01 | -52.13 |
| BR:peld:furg:patos:PELD_ELPA:1998:1:3:MARINHEIROS | 1998-01-03 | Porto Rei embayment | Patos Lagoon estuary | estuary | 1e same time (10 am | -32.01 | -52.13 |
| BR:peld:furg:patos:PELD_ELPA:1998:1:4:MARINHEIROS | 1998-01-04 | Porto Rei embayment | Patos Lagoon estuary | estuary | 1e same time (10 am | -32.01 | -52.13 |
| BR:peld:furg:patos:PELD_ELPA:1998:1:5:MARINHEIROS | 1998-01-05 | Porto Rei embayment | Patos Lagoon estuary | estuary | 1e same time (10 am | -32.01 | -52.13 |
| BR:peld:furg:patos:PELD_ELPA:1998:1:6:MARINHEIROS | 1998-01-06 | Porto Rei embayment | Patos Lagoon estuary | estuary | 1e same time (10 am | -32.01 | -52.13 |
| BR:peld:furg:patos:PELD_ELPA:1998:1:7:MARINHEIROS | 1998-01-07 | Porto Rei embayment | Patos Lagoon estuary | estuary | 1e same time (10 am | -32.01 | -52.13 |

únicos

redundância



| eventID | measurementValue | measurementType | measurementUnit | measurementID | measurementMethod |
|---------------------------------------------------|------------------|-------------------|-----------------|--------------------------------------------|-----------------------------------------------------------|
| BR:peld:furg:patos:PELD_ELPA:1998:1:1:MARINHEIROS | 18.0 | Water temperature | ° C | BR:peld:furg:patos:PELD_ELPA:abiotic:00001 | Mercury thermometer with precision of 0.1 C° |
| BR:peld:furg:patos:PELD_ELPA:1998:1:1:MARINHEIROS | 1.00 | Salinity | PSU | BR:peld:furg:patos:PELD_ELPA:abiotic:00002 | Portable optical refractometer with precision of one unit |
| BR:peld:furg:patos:PELD_ELPA:1998:1:2:MARINHEIROS | 19.0 | Water temperature | ° C | BR:peld:furg:patos:PELD_ELPA:abiotic:00003 | Mercury thermometer with precision of 0.1 C° |
| BR:peld:furg:patos:PELD_ELPA:1998:1:2:MARINHEIROS | 0.00 | Salinity | PSU | BR:peld:furg:patos:PELD_ELPA:abiotic:00004 | Portable optical refractometer with precision of one unit |
| BR:peld:furg:patos:PELD_ELPA:1998:1:3:MARINHEIROS | 23.0 | Water temperature | ° C | BR:peld:furg:patos:PELD_ELPA:abiotic:00005 | Mercury thermometer with precision of 0.1 C° |
| BR:peld:furg:patos:PELD_ELPA:1998:1:3:MARINHEIROS | 0.00 | Salinity | PSU | BR:peld:furg:patos:PELD_ELPA:abiotic:00006 | Portable optical refractometer with precision of one unit |

| eventID | eventDate | locality | waterBody | habitat | SamplingProtocol | decimalLatitude | decimalLongitude |
|---------------------------------------------------|------------|---------------------|----------------------|---------|---------------------|-----------------|------------------|
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| BR:peld:furg:patos:PELD_ELPA:1998:1:2:MARINHEIROS | 1998-01-02 | Porto Rei embayment | Patos Lagoon estuary | estuary | ie same time (10 am | -32.01 | -52.13 |
| BR:peld:furg:patos:PELD_ELPA:1998:1:3:MARINHEIROS | 1998-01-03 | Porto Rei embayment | Patos Lagoon estuary | estuary | ie same time (10 am | -32.01 | -52.13 |
| BR:peld:furg:patos:PELD_ELPA:1998:1:4:MARINHEIROS | 1998-01-04 | Porto Rei embayment | Patos Lagoon estuary | estuary | ie same time (10 am | -32.01 | -52.13 |
| BR:peld:furg:patos:PELD_ELPA:1998:1:5:MARINHEIROS | 1998-01-05 | Porto Rei embayment | Patos Lagoon estuary | estuary | ie same time (10 am | -32.01 | -52.13 |
| BR:peld:furg:patos:PELD_ELPA:1998:1:6:MARINHEIROS | 1998-01-06 | Porto Rei embayment | Patos Lagoon estuary | estuary | ie same time (10 am | -32.01 | -52.13 |
| BR:peld:furg:patos:PELD_ELPA:1998:1:7:MARINHEIROS | 1998-01-07 | Porto Rei embayment | Patos Lagoon estuary | estuary | ie same time (10 am | -32.01 | -52.13 |

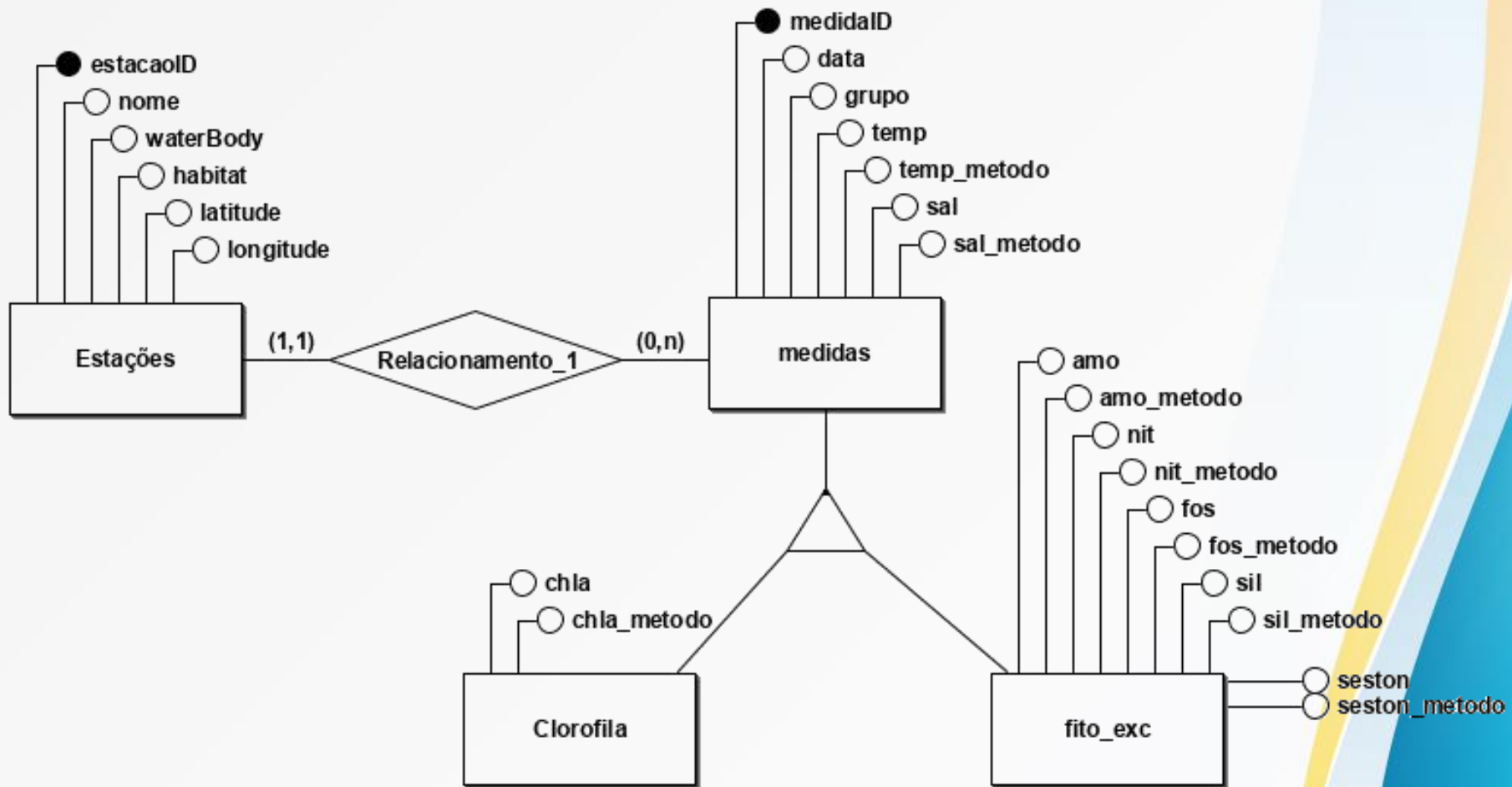
únicos

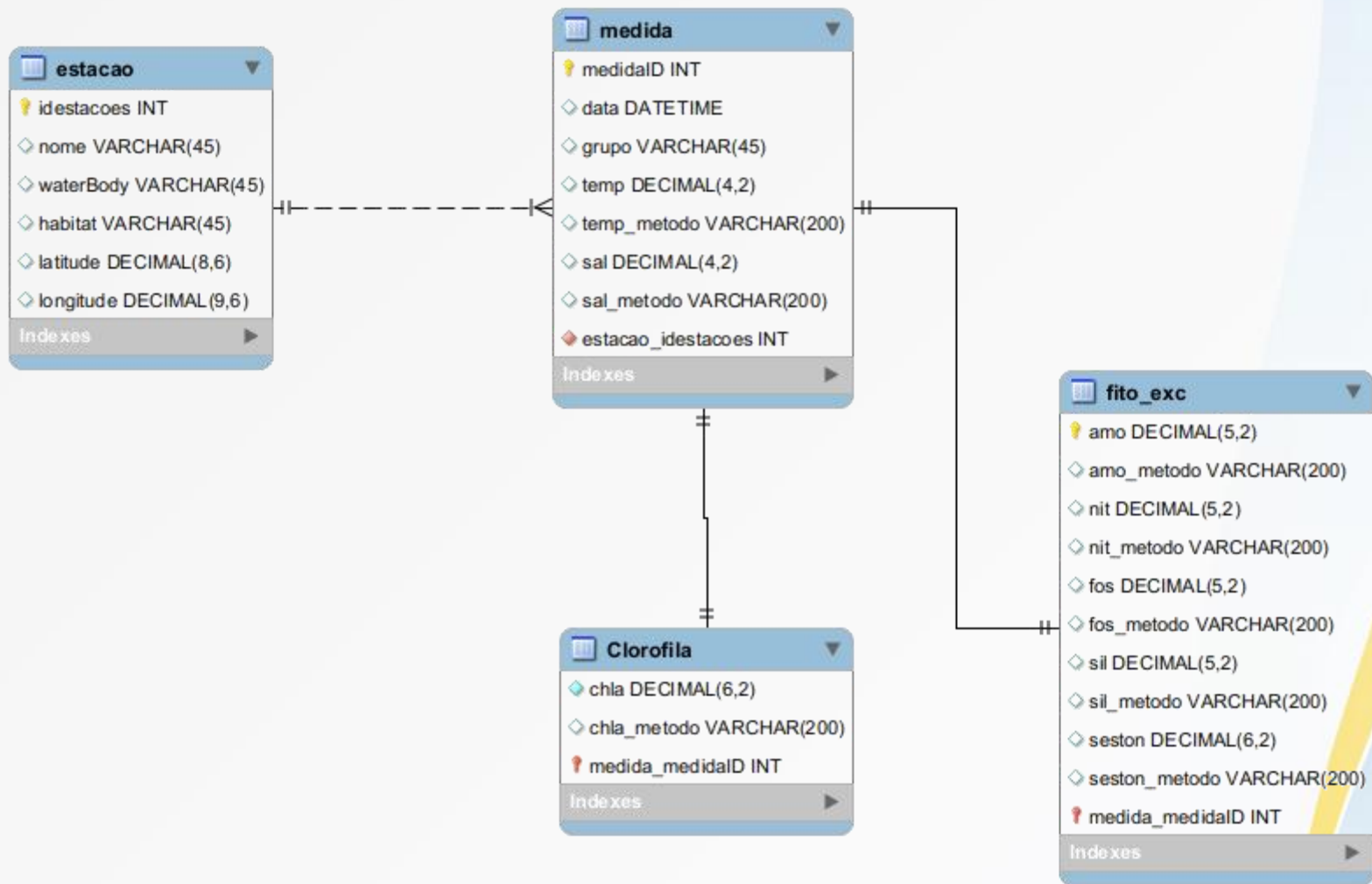
redundância

| eventID | measurementValue | measurementType | measurementUnit | measurementID | measurementMethod |
|---------------------------------------------------|------------------|-------------------|-----------------|--------------------------------------------|-----------------------------------------------------------|
| BR:peld:furg:patos:PELD_ELPA:1998:1:1:MARINHEIROS | 18.0 | Water temperature | ° C | BR:peld:furg:patos:PELD_ELPA:abiotic:00001 | Mercury thermometer with precision of 0.1 C° |
| BR:peld:furg:patos:PELD_ELPA:1998:1:1:MARINHEIROS | 1.00 | Salinity | PSU | BR:peld:furg:patos:PELD_ELPA:abiotic:00002 | Portable optical refractometer with precision of one unit |
| BR:peld:furg:patos:PELD_ELPA:1998:1:2:MARINHEIROS | 19.0 | Water temperature | ° C | BR:peld:furg:patos:PELD_ELPA:abiotic:00003 | Mercury thermometer with precision of 0.1 C° |
| BR:peld:furg:patos:PELD_ELPA:1998:1:2:MARINHEIROS | 0.00 | Salinity | PSU | BR:peld:furg:patos:PELD_ELPA:abiotic:00004 | Portable optical refractometer with precision of one unit |
| BR:peld:furg:patos:PELD_ELPA:1998:1:3:MARINHEIROS | 23.0 | Water temperature | ° C | BR:peld:furg:patos:PELD_ELPA:abiotic:00005 | Mercury thermometer with precision of 0.1 C° |
| BR:peld:furg:patos:PELD_ELPA:1998:1:3:MARINHEIROS | 0.00 | Salinity | PSU | BR:peld:furg:patos:PELD_ELPA:abiotic:00006 | Portable optical refractometer with precision of one unit |

| estacaoid | nome | locality | waterBody | habitat | latitude | longitude |
|-----------|-------------|---------------------|----------------------|---------|----------|-----------|
| 1 | Marinheiros | Porto Rei embayment | Patos Lagoon estuary | estuary | -32.01 | -52.13 |

| estacaoid | medidaID | data | temp | temp_metodo | sal | sal_metodo |
|-----------|----------|------------|-------|---------------|-----|-----------------------|
| 1 | 1 | 1/01/1998 | 18.0 | meter with pr | 1 | refractometer with pr |
| 1 | 2 | 2/01/1998 | 19.00 | meter with pr | 0 | refractometer with pr |
| 3 | 3 | 3/01/1998 | 19.0 | meter with pr | 10 | refractometer with pr |
| 2 | 4 | 10/05/1999 | 0.00 | meter with pr | 33 | refractometer with pr |





Observações

- s/ dados: cetáceos e VAS;
- definir idioma padrão? pt/en;
- definir grandeza e precisão;
- ** lon/lat fixos ao longo do tempo?

Servidor

- Compra de um servidor
 - config dependente da perspectiva;
- Google Cloud Platform (GCP)
 - custo ~R\$200/mês (ou menos U\$25/mês p/ 3 anos)
 - upgrade com a demanda

um servidor de 30mil = 10 anos de GCP

integração e consulta

- linguagem SQL simples (workshop):
 - select temp from medida where grupo=fito and data>2010
 - select avg(temp) from medida, estacao where nome=museu group by ano
- Libreoffice
- SIG --> QGIS

integração e consulta

The screenshot displays the Microsoft Access application window. At the top, there is a menu bar with 'File', 'Edit', 'View', 'Insert', 'Tools', 'Window', and 'Help'. Below the menu bar is a toolbar with various icons for file operations and database management. The main interface is divided into two panes. The left pane, titled 'Database', contains icons for 'Tables', 'Queries', 'Forms', and 'Reports', with 'Forms' highlighted in orange. The right pane, titled 'Tasks', contains two options: 'Create Form in Design View...' and 'Use Wizard to Create Form...'. Below the 'Tasks' pane is a list of existing forms, with the first one, 'OK - Cadastrar nova especie', highlighted in orange.

File Edit View Insert Tools Window Help

Database

Tables

Queries

Forms

Reports

Tasks

Create Form in Design View...

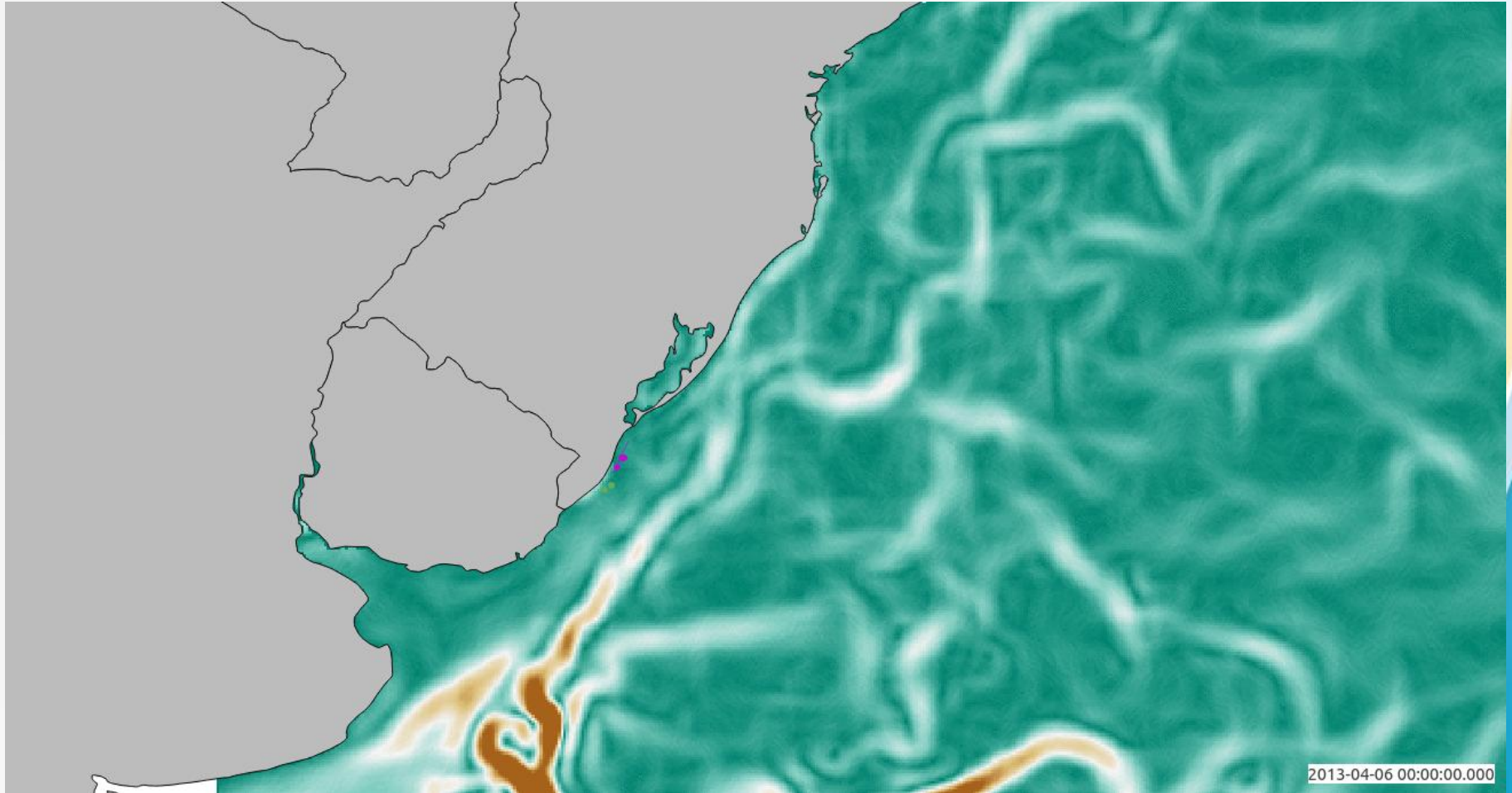
Use Wizard to Create Form...

Forms

- OK - Cadastrar nova especie
- OK - Cadastrar novo anzol
- OK - Cadastras Lance Arrasto
- OK - Cadastras Lance Espinhel
- OK - Capturas Incidentais Arrasto
- OK - Capturas Incidentais Espinhel
- OK - Capturas Incidentais Espinhel - Op.2
- OK - Capturas por tipo de anzol

here

integração e consulta



Utilização Google Cloud Platform

- Fred Hutch addition of Google Cloud to their researcher's portfolio of compute engines: Trabalho para estudo do cancer
- Estudo genômico: cruzando com dados de outras fontes.
- privacidade