

# Meteorologist

## ROLE OVERVIEW

**As a meteorologist, you will analyze and forecast weather, provide consultation on atmospheric phenomena, and conduct research into the processes and phenomena of weather, climate and atmosphere.**

. As a subsector of meteorology, marine meteorology studies overarching weather and climate systems specific to oceanographic conditions in marine environments and the interactions between the ocean and atmosphere. You will use knowledge in this discipline to understand and produce scientific information in support of marine activities.

The largest group of specialists are called operational meteorologists, more commonly referred to as weather forecasters. In this position, you interpret current weather information coming from a multitude of sources. Your main responsibility in this position is to make short and long-range forecasts for given regions. Other specializations in meteorology include dynamic, physical, environmental, industrial, and synoptic meteorology. If employed by the government, you will prepare reports sourced from atmospheric data catered to business and political reasons. You could also pursue a career in collaboration with the military, providing information to members of the armed forces.

Since meteorologic stations can be in remote areas, as a meteorologist you might find yourself working in solitude for periods of time, or on a rotation basis. However, these would be restricted to coastal areas for marine meteorologists. Employment ranges through all levels of government, natural resources, utility companies, and consulting firms.

## STRATA LEVEL: 3B – Technical Specialist

### Also Known as:

- Applied Meteorologist
- Climatologist
- Research Meteorologist

### Education and Experience:

- Bachelor of Science degree with a major in meteorology, climatology, physics, mathematics, environmental science, environmental earth science, or a related discipline.
- A Master's or PhD in meteorology is preferred.
- Certification is not mandatory, but most practitioners belong to professional groups such as the Canadian Meteorological and Oceanography Society (CMOS).

### Associated NOC(s):

- **2114** – Meteorologists and Climatologists



## TECHNICAL



### Data Analysis

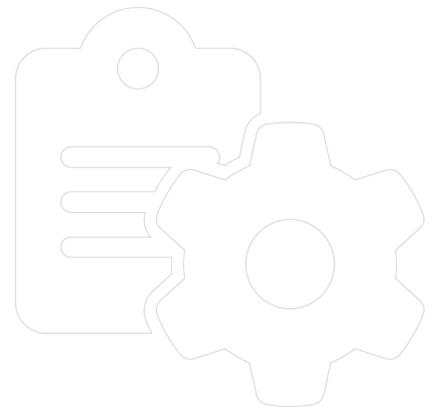
**Applies recognized statistical tools and techniques to interpret and analyze data for the purposes of uncovering trends, patterns, and opportunities to enable strategic decision making.**

- Confirm data is sufficient and valid prior to analysis to ensure data was collected with current legislations, survey plan, and specifications.
- Apply appropriate analytical programming techniques using standard tools to provide data solutions to facilitate decision making.
- Identifies inconsistencies or reliability concerns to data to take appropriate action to remedy or recreate data.
- Collects baseline and trend data on operational metrics to develop insights and report on key sustainability performance indicators.
- Analyses and interprets structured and un-structured environmental data to prepare comprehensive reports and present recommendations to senior management.

### Scientific Research

**Applies scientific methods and techniques using empirical and/or measurable observation in their research to improve, correct or increase knowledge in a field of study to solve specific problems.**

- Participates in or carries out research studying the physical and chemical characteristics and processes of the atmosphere to predict weather-related phenomena.
- Analyze the impact of industrial projects and human activity on the climate.
- Provide research in collaboration with the social science, engineering, and economic communities to develop appropriate mitigation strategies.
- Conduct research and provide consultation on the processes and determinants of atmospheric phenomena, weather, and climate.



## Equipment Operation

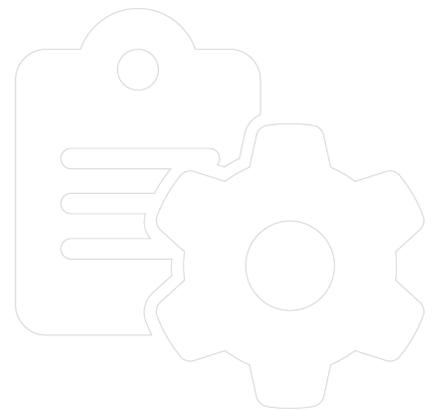
**Operates equipment using established processes to ensure outcomes are within allowable variances and maximizes safety and efficiency.**

- Inspects data acquisition equipment and instruments used for atmospheric monitoring, recording, and reporting to ensure it meets accepted standards.
- Installs meteorological equipment and related infrastructure at observation sites based on standards, site realities and logistical considerations.
- Follows appropriate procedures to calibrate and recalibrate instruments and equipment to ensure accurate measurements and quality control.
- Use survey equipment and instrumentation to collect and gather samples and data to identify characteristics.

## Meteorological Observations

**Observes surface based meteorological conditions to classify and quantify meteorological elements and record elemental data.**

- Identify and select the appropriate method to record meteorological observations and accurately describe present elements.
- Uses all available information to quantify element characteristics to analyze particular phenomena associated with the event.
- Cross-reference the validity of data to reconcile contradictory information and address inaccuracies.



## Meteorological Case Studies

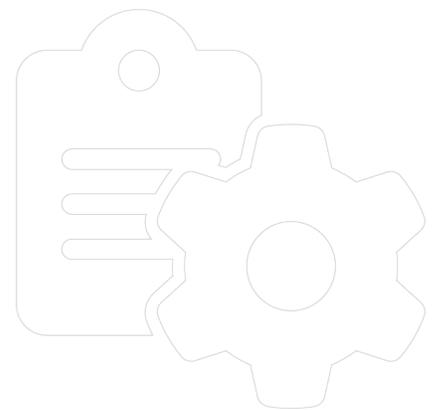
**Produces a meteorological case study to interpret and communicate abnormal weather events.**

- Identify unique weather patterns and data to identify an opportunity to study extreme or unusual weather.
- Use meteorological data and instruments to anticipate weather conditions to produce forecasts to be used by others.
- Apply appropriate theories and models to interpret abnormal weather patterns to draw conclusions to inform decision makers.
- Review estimated meteorological parameters to solve gaps between real-time conditions and forecasted conditions.

## Meteorological Dissemination

**Provide advice and guidance to organizations or individuals on how to interpret meteorological information using raw data and technical software.**

- Acts as a liaison to interpret meteorological information/requirements between non-meteorological users and technical colleagues.
- Prepares and modifies atmospheric models and tools to assess impacts of past activities or potential issues from proposed activities to enable informed decisions.
- Provides advice to external agencies, professionals, or researchers regarding the use and interpretation of climatological information.
- Provides verification reports in appropriate formats to various audiences to support the quality management process.



## Weather and Climate Modelling

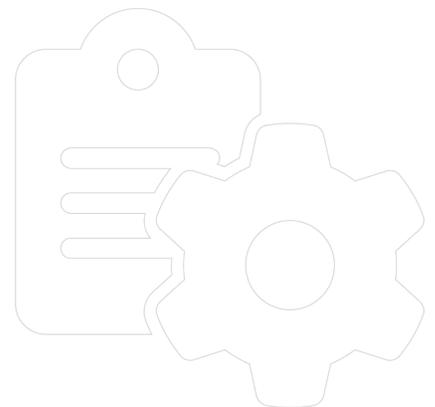
**Applies mathematical models of the atmosphere and oceans to generate short term weather forecasts or long-term climate predictions.**

- Develop or use mathematical or computer models to forecast weather.
- Conduct numerical simulations of climate conditions to understand and predict global or regional weather patterns.
- Interpret environmental data, such as meteorological, atmospheric, oceanic, paleoclimate, climate, or related information to formulate climate predictions.
- Interpret data, reports, maps, photographs, or charts to predict long- or short-range weather conditions, using computer models and knowledge of climate theory, physics, and mathematics.

## Stakeholder Relations Management

**Identifies the needs of relevant actors, working in partnerships with all necessary partners, to achieve a well-balanced solution to desired project, process, or program.**

- Provides advice to external agencies, professionals, or researchers regarding the use and interpretation of climatological information.
- Maintains working relationships, both internally and externally, to foster a network of influence and connectivity to improve future prospects.
- Identify and potential issues with current or proposed marine use to develop and evaluate potential solutions.
- Advise operation crews or supervising agencies on construction, land use, or resource management to provide information for use in regional development, site selection or development.



## PERSONAL AND PROFESSIONAL



### Communication

**Positively directs outcomes by delivering communication that results in a better understanding of goals and objectives and that captures interest, and gains support for immediate action.**

- Prepares documentation to disseminate weather forecasts and reports through a variety of different media outlets for public consumption.
- Participates as a speaker, panellist, or expert in conferences, and public forums on related topics and issues to promote business development and issues related to water and wastewater.
- Integrates the contribution of multiple disciplines into an integrated and cohesive narrative that stakeholders can readily and easily understand.
- Shares relevant and useful knowledge, experience, or expertise to aid team members accomplish their objectives more efficiently or effectively.
- Reviews weather data to maintain the validity of the forecast, identifying critical parameters of the forecast, relevant trends, risk assessments and warnings.

### Problem Solving

**Identifies problems and uses logic, judgement, and evidence to evaluate alternative scenarios and recommend solutions to achieve a desired goal.**

- Takes an unbiased stance to interpreting new information to solve a problem in an object manner.
- Analyzes operational data to evaluate operations, understand trends, and potential areas of concern to take appropriate action where required.
- Considers all pieces of information when attempting to solve problems to produce a cognisant and comprehensive solution.



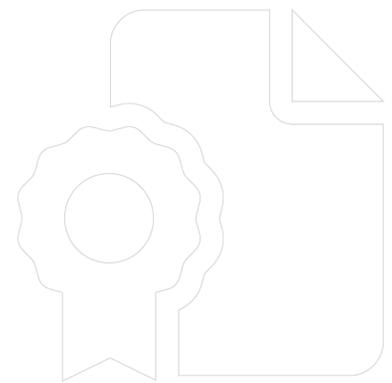
## LEGAL, REGULATORY, AND POLICY



### Regulatory Compliance

**Adheres to specific regulations, codes, and legislation within a defined jurisdiction to ensure the health and safety of others.**

- Participates in developing and maintaining standard operating procedures to uphold best practices and quality of outputs.
- Consults with different government agencies to secure regulatory approvals and permits.
- Provide oversight on provincial and federal regulatory requirements associated with meteorological research and reporting.
- Analyzes relevant regulations, legislations, and standards to ensure the project complies with laws, regulations, and standards.



## ENVIRONMENTAL

**Climate Change Competencies**

**Studies aspects of changes in the climate to understand the potential effects of activities on the natural and human environments.**

- Develops greenhouse gas emissions inventory/trading systems to be compatible with the regulatory programs.
- Informs, develops, or implements improvements to organizational operations in areas such as pollution prevention, abatement and control, energy efficiency, and water and/or waste management.
- Participates in development plans, initiatives, projects, or programs to monitor renewable energy usage and greenhouse emissions that meet production or building operations needs.
- Monitors and reports success of management plans, initiatives, programs, projects, or activities aimed at reducing energy demand or improving energy efficiency.

