MARINA GADONNEIX
Phenomena

September 28, 2019 to January 5, 2020
Curator: María Wills Londoño, in collaboration with Audrey Genois and Maude Johnson

Marina Gadonneix combines documentation, simulation, and fiction to make the energy around objects visible. Merging abstraction and figuration, place and non-place, she examines, through images, the photographic act and its ability to capture the “event” of the real.

The exhibition *Phenomena*, presented in collaboration with Les Rencontres d’Arles, explores scientific models that replicate natural events by probing the theatricality of the laboratory, a place of experimentation in which the world is constantly re-created. Through their artificial (re)production, these phenomena (an avalanche, a tornado, lightning, and so on) literally take shape and become things—entities that we can now grasp.

The resulting visual compositions nevertheless leave room for mystery, for undecidability. Enigmatic and seductive, the atmosphere created by these representations evokes the sensory rather than the rational: there are few clues to help us understand whether what is “happening” in the image is something marvellous or catastrophic. In a way, the work tests the collective imaginary of scientific narratives. Gadonneix examines the human desire to intellectually appropriate abstract things and transform intangible phenomena into objects (of study). In her staged images, she explores the notion of the elusive in relation to the intrinsic human need to measure and control what surrounds us.

Marina Gadonneix (b. 1977) is a French artist who lives and works in Paris. Her work has been exhibited on the local, national, and international scenes, including in the Ateliers de l'Institut français at the Palais de Tokyo (Paris), the Centre photographique d'Île-de-France (Pontault-Combault), Darmstadt Days of Photography, Kaune Contemporary (Cologne), and CONTACT Photography Festival (Toronto). She is represented by Galerie Christophe Gaillard (Paris).

Curator in charge of the exhibition: Anne-Marie Saint-Jean Aubre, Curator of Contemporary Art, Musée d'art de Joliette

The presentation of this exhibition results from a collaboration between MOMENTA | Biennale de l'image, the Musée d'art de Joliette, and Les Rencontres d'Arles.

MARINA GADONNEIX
Paris, France, 1977

1. *Kristian Birkeland (1867-1917) – Norwegian physicist in his laboratory*

2. *Untitled (Polar Aurora Borealis)*
2016
The Beauty of the Heavens, a Pictorial Display of the Astronomical Phenomena of the Universe – One Hundred and Four Coloured Scenes, Illustrating a Familiar Lecture on Astronomy,
Charles F. Blunt, London, Tilt and Bogue, 1842.

Untitled (Classification of Colours)

2016
The Forces of Nature – A Popular Introduction to the Study of Physical Phenomena,
Amédée Guillemin, London, MacMillan and Co., 1872.

Untitled (The Planet Mars)
2016
The Beauty of the Heavens, a Pictorial Display of the Astronomical Phenomena of the Universe – One Hundred and Four Coloured Scenes, Illustrating a Familiar Lecture on Astronomy,
Charles F. Blunt, London, Tilt and Bogue, 1842.

Untitled (Spectra of Different Sources)
2016
The Forces of Nature – A Popular Introduction to the Study of Physical Phenomena,
Amédée Guillemin, London, MacMillan and Co., 1872.

3. Untitled (The Nebula Andromeda)
2016
The Beauty of the Heavens, a Pictorial Display of the Astronomical Phenomena of the Universe – One Hundred and Four Coloured Scenes, Illustrating a Familiar Lecture on Astronomy,
Charles F. Blunt, London, Tilt and Bogue, 1842.

Untitled (The Milky Way)
2016
The Beauty of the Heavens, a Pictorial Display of the Astronomical Phenomena of the Universe – One Hundred and Four Coloured Scenes, Illustrating a Familiar Lecture on Astronomy,
Charles F. Blunt, London, Tilt and Bogue, 1842.

Untitled (Sun As Seen From Different Planet)
2016
The Beauty of the Heavens, a Pictorial Display of the Astronomical Phenomena of the Universe – One Hundred and Four Coloured Scenes, Illustrating a Familiar Lecture on Astronomy,
Charles F. Blunt, London, Tilt and Bogue, 1842.

Untitled (Soap Bubble)
2016
The Forces Nature – A Popular Introduction to the Study of Physical Phenomena,
Amédée Guillemin, London, MacMillan and Co, 1872.

Dibner Library of the History of Science and Technology, Smithsonian Libraries, Washington, D. C.

4. *Untitled (Waves)* #2 #4

2016
LHEEA (Laboratoire de recherche en hydrodynamique, énergétique et environnement atmosphérique) CNRS (centre national de la recherche scientifique), École centrale de Nantes.

Swell tanks at the Research Laboratory in Hydrodynamics, Energetics & Atmospheric Environment (LHEEA) allow scientists to observe different wave behaviors. At five meters deep, and measuring 30 by 50 meters, this basin has a computer-activated wave generator at one end—made up of 48 mobile panels—and a wave breaking beach at the other. The apparatus can generate different kinds of sea swells, including multidirectional swells, characteristic of deep water; regular swells; and also misaligned waves going in the same direction and two different directions. lt can also recreate extreme wave phenomena, such as rogue waves, defined as waves that are at least twice as high as the surrounding waves and that form suddenly and unexpectedly—hence their more familiar name of monster waves or killer waves.

5. *Untitled (Mars Yard)* #1

2015
ExoMars Rover Mission, European Space Agency and Airbus, Stevenage (UK).

The ExoMars Rover Mission Mars Yard room, which holds 300 tons of sand, was created to simulate environmental conditions on the Red Planet.
The walls, doors, and interior surfaces are ail painted a reddish brown to mimic the predominant colors of Mars. The room was used to test and perfect the navigation systems of robots in preparation for a 2018 mission to Mars. After the mission, the yard was set to be made available to film crews, as a location for science fiction movies.

6. *Untitled (Mars Yard)* #4
2015
CNES (Centre national d’études spatiales), Toulouse.

Testing fields at the National Centre for Space Studies (CNES) in Toulouse include a replica of the land on Mars, as such reproducing planetary conditions encountered by rovers. The terrain is used to help the development of navigation systems that use computer-generated vision. In order to test the optical ability of instruments that will travel to Mars, scientists use geometrically-shaped forms, as it is easier to calibrate sensors and cameras if the "visualized" objects present straight lines. Once the instruments have digitally captured the forms, scientists can compare the images with the true geometric forms and adjust the computer’s vision algorithms.

7. *Untitled (Tornado)* #5 #7 #8
2016
WiST (Wind Simulation and Testing Laboratory) Department of Aerospace Engineering, Iowa State University, Ames , Iowa

The Iowa State University Tornado Simulator was the world’s first simulator of moving, or "translating" tornados, and remains one of the largest of its kind. Before its invention, simulators were built primarily for meteorological purposes and used only a static vortex. By creating a moving vortex and examining the simulator’s effect on model buildings, the ISU simulator allows researchers to test a tornado’s stresses on civil structures more accurately. Mist produced by dry ice and Particle Image Velocimetry are used for flow visualization and in order to conduct detailed measurements. The data can then be used to help design "tornado-resistant" structures. In the past, all laboratory tornado simulator designs were based on the pioneering work of the meteorologist Neil B. Ward, and were built for meteorological purposes to understand the parameters influencing the tornado formation.

8. *Untitled (Northern Lights)* #1 #2 #3 #4 #6 #7 #8

2015

LESIA (Laboratoire d'études spatiales et d'instrumentation en astrophysique) Observatoire de Meudon, Meudon.

The Meudon Observatory's Planeterrella or "Little Earth" is a planetary auroral simulator that makes it possible to replicate Aurora Borealis (Northern Lights) by shooting electrons into a magnetized sphere placed in a vacuum chamber. Northern Lights, which blaze across night skies in polar regions, have long excited people's imagination and given rise to legends. Caused by the interplay between solar activity and the Earth's magnetic field, the aurorae occur when enough electrons and protons reach the Earth from the Sun. This can happen via a solar wind or a solar eruption that throws particles from a cloud so they intercept with the Earth as they cross its orbit. In such conditions, a diffuse aurora falls toward Earth, creating a green "veil" while, above, the sky can glow cardinal red. If a solar tiare occurs, different colors can appear, with patterns shifting in a matter of minutes. Toward the end of the 19th century, the Norwegian physicist Kristian Birkeland decided to try to recreate Northern Lights by shooting a beam of electrons, known as a cathode ray, into a magnetized sphere suspended in a vacuum chamber. In his experiment, the cathode represented the Sun, while the rays replicated the expanding solar atmosphere and the magnetized sphere delineated the Earth.

9. *Untitled (Lightning)*

2014

Laboratoire Ampère, CNRS (Centre national de recherche scientifique), École Centrale de Lyon, Lyon.

Realistic cloud-to-ground lightning simulations help scientists to measure lightning, which provides essential data for engineers designing aircraft, buildings, and other structures. In natural conditions, lightning bolts strike the ground when the electrical charge between a storm cloud and solid land becomes too great. To recreate this effect at the Ampère Laboratory, two electrodes are set up opposite one another: one as the "cloud" and the other as the "ground." When the charge between the two electrodes reaches a certain threshold, lightning forms. Researchers have developed lightning simulations using a generator that can create a charge of up to two millions volts.

10. *Untitled (Wildfire)* #1 #2 #4

2015

Lemta (Laboratoire d'énergétique et de mécanique théorique et appliquée), CNRS (Centre national de la recherche scientifique), Université de Lorraine, Vandoeuvre.

Lab-scale experiments of wildfires help scientists to understand, model, and predict fire propagation. They also help answer key fire-safety questions : how quickly will a wildfire spread and in which direction? How much heat will it generate? How do wind and slope conditions affect its spread? What is the impact of different fuel types and meteorological conditions? In the experiments performed at the Laboratory of Energetics, Theoretical and Applied Mechanics (LEMTA) of the National Center for Scientific Research (CNRS), a controlled fire is allowed to spread on an inclined table, as captured in the picture, or in a wind tunnel. Understanding how a fire transitions from surface to crown and other extreme fire behaviors is crucial to helping firefighters. As well as posing a scientific challenge, these studies also help restrict societal damage from wildfires, as well as ecological and environmental impact caused by vegetation destruction and smoke pollution.

11. *Untitled (Avalanche)* #1

2015

ETNA (Érosion torrentielle, neige et avalanche),
IRSTEA (Institut national de recherche en sciences et technologies pour l'environnement et l'agriculture), Grenoble.

Understanding the precise dynamics of avalanches—from what triggers them to their impact on obstacles and their flow—is a fundamental first step to understanding the risks they pose. What sets an avalanche off is the action of gravity on the density difference that exists between a powder snow flow (heavy fluid) and ambient air (light fluid). In laboratory simulations carried out at the National Institute of Science Research for the Environment and Agriculture (IRSTEA), the heavy fluid is represented by salt water and the light fluid by unsalted water. A water reservoir, two meters high with a ground surface of 10 square meters, is placed on a variable inclination plane to reproduce three-dimensional avalanches.

12. *Untitled (Volcanic Eruption)* #2 #3 #4 #5 #6 #7

2016

Physical Volcanology Lab, Department of Geosciences, Idaho State University, Pocatello, Idaho

Volcanic eruption simulation tanks in the Physical Volcanology Laboratory of the Idaho State University are used to create to-scale versions of volcanic eruption columns. As a volcanic plume (the mixture of particles and gas emitted by an eruption) rises, it ingests cold ambient air that warms and expands. This changes the density of the plume and determines whether it continues to rise or drop to the ground as a deadly pyroclastic flow-like the one that famously entombed Pompeii. This experimental setup injects a simulated plume, colored with high-pigment dye, into a large tank of water. Next, the relative densities of the plume and the ambient fluids are scaled to resemble a volcanic one and its surrounding atmosphere, allowing scientists to observe the different effects on the volcano's behavior.

FLOOR PLAN

1st floor

Salle Nicole et René Després et Jeannette et Luc Liard