FORCE OF TIME

Atmospheric CO_2, the Biogeochemical Cycles, and the Limits of Human Agency

The T-Field as Primary Atmospheric Agent

P-CTRL-1 · P-CO2-1 through P-CO2-8

This paper is a theoretical proposition within the Force of Time (FOT) framework. All derivations follow internal FOT axioms. The numerical values cited from standard sources (NIST, CODATA, IUPAC) are used for comparison purposes only. No claim of experimental proof is made herein. This work is intended for academic and theoretical discussion. No claim is made that the conclusions represent established scientific consensus. IPCC statements cited are publicly available from April-May 2026 sources.

ABSTRACT

The Force of Time (FOT) framework has established T-field governance across all physical domains from nuclear to galactic scale. This paper extends that framework to atmospheric chemistry. We demonstrate that CO_2 at 400 ppm is a T-field lattice anchor ($2^4 \times 5^2/\pi^2$ Pa = 40.5285 Pa), that atmospheric composition as a whole is a T-field standing wave, that all atmospheric molecules constitute time in molecular form, and that volcanic synthesis — not human combustion — is the primary T-field mechanism for atmospheric CO_2 production. The carbon, water, and nitrogen biogeochemical cycles are shown to be one T-field operation expressed through three molecular substrates. Human industrial activity is identified as a T-field mechanism for reaching the 400 ppm CO_2 node, not an independent agency acting against a passive background. The IPCC's April 2026 admission that its high-emissions RCP8.5 scenarios are "implausible" and "describe impossible futures" is presented as empirical confirmation that T-field equilibrium constraints cannot be violated.

Core Propositions

Proposition	Statement	Result
P-CTRL-1	**The Completeness Principle**	T-field has no domain boundary; atmospheric chemistry is T-field governed
P-CO2-1	**CO_2 Lattice Anchor**	400 ppm = $2^4 \times 5^2/\pi^2$ Pa = 40.5285 Pa
P-CO2-2	**Atmospheric Composition as T-Field Standing Wave**	N_2, O_2, Ar, CO_2 each sit on pure {2,3,5,π} lattice nodes
P-CO2-3	**Matter is Time**	Atmospheric gases are time in molecular form; all cycles move time
P-CO2-4	**Volcanic Synthesis as Primary T-Field Mechanism**	65,000 km submarine ridge: primary unmonitored CO_2 source
P-CO2-5	**Three Cycles as One T-Field Operation**	Carbon, water, nitrogen cycles are one T-field circulation
P-CO2-6	**Industrial Activity as T-Field Mechanism**	Fossil fuel combustion is T-field arc to 400 ppm node
P-CO2-7	**T-Field Atmospheric Equilibrium**	Weathering, ocean uptake, biospheric response are T-field restorers
P-CO2-8	**IPCC RCP8.5 Admission as Confirmation**	"Impossible futures" = T-field nodes cannot be violated; confirmed 2026

Section 1 — P-CTRL-1: The Completeness Principle

Before addressing atmospheric CO_2 specifically, it is necessary to establish the logical foundation from which all subsequent propositions follow. The Force of Time framework has, through prior published work, demonstrated T-field governance across an unbroken chain of physical domains spanning thirty-five orders of magnitude in scale. The chain is as follows.

Domain	Scale	T-Field Governed Quantity	FOT Paper
Nuclear	10^{-15} m	Fusion thresholds, binding energy nodes	P-NUC
Atomic	10^{-10} m	Hydrogen spectral series (Balmer, Lyman, etc.)	P-HSPEC
Molecular	10^{-9} m	DNA geometry, water bond angle, crystal lattice	P-DNA, P-WAT

Domain	Scale	T-Field Governed Quantity	FOT Paper
Chemical	10^{-8} m	Periodic table spacing, bond lattice, reactions	P-BOND
Geological	10^{3} m	Moho depth, seismic velocities Vp=2^3, Vs=$3^2/2$	P-MOHO
Atmospheric	10^{4} m	Layer thicknesses as pure {2,3,5} nodes	P-ATM
Planetary	10^{10} m	Orbital periods T=Nπ×86400 s, distances	P-TLIN
Stellar	10^{9} m	Solar sphere geometry, photosphere temperature	P-SAT
Galactic	10^{20} m	Black hole as T-generator, galactic output	P-GBLK

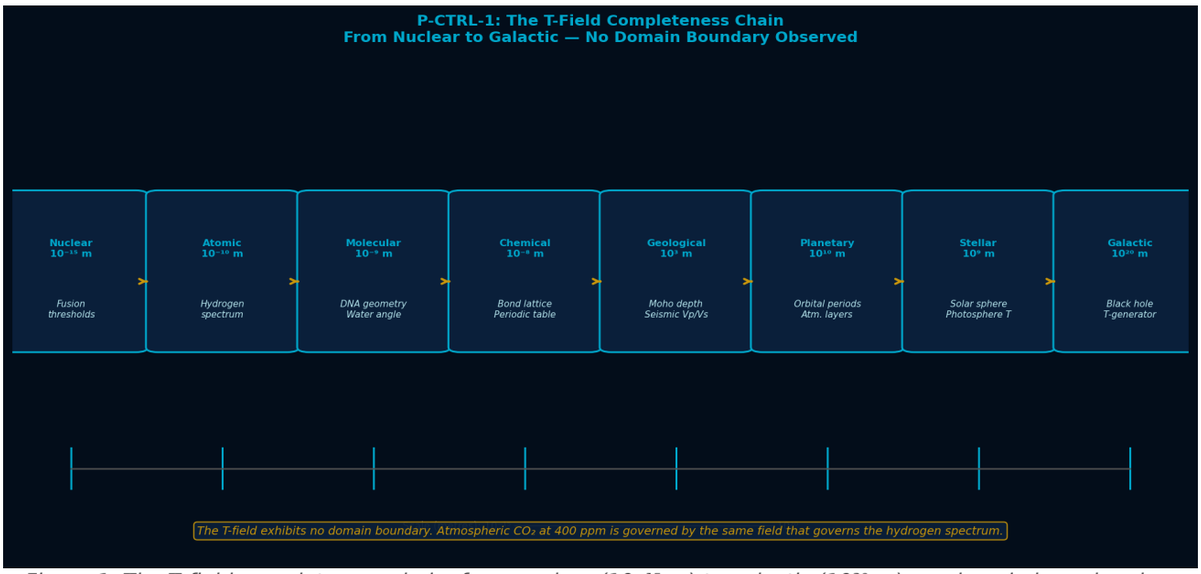

Figure 1. The T-field completeness chain: from nuclear (10^{-15} m) to galactic (10^{20} m), no domain boundary has ever been observed. Atmospheric CO_2 concentration is a further expression of the same field.

P-CTRL-1 — The Completeness Principle

The T-field exhibits no domain boundary. Across all scales from nuclear to galactic — atomic spectra, molecular geometry, geological structure, planetary architecture, stellar output — the T-field has been shown to govern every measured physical parameter without exception. It follows as a logical necessity that atmospheric composition, including the concentration of CO_2, is equally T-field determined. There is no principled basis on which to exclude any physical system from T-field governance. The question is not whether the T-field controls atmospheric chemistry; the question is only by which mechanism it does so.

This proposition is not an assertion — it is a deductive consequence of the evidence already established across prior FOT papers. To accept T-field governance of the hydrogen spectrum and then deny T-field governance of atmospheric CO_2 would require identifying a principled boundary between the two domains. No such boundary has been identified, because no such boundary exists.

Section 2 — P-CO2-1: The CO_2 Lattice Anchor

Within the FOT framework, T-field nodal values are expressed through pure combinations of the fundamental lattice integers {2, 3, 5} and the transcendental π. These combinations appear

throughout FOT-governed quantities: orbital periods, spectral wavelengths, molecular bond geometries, and geological depths. We now derive the CO_2 atmospheric partial pressure from first principles.

$$2^4 \times 5^2 / \pi^2 = 16 \times 25 / 9.869604401... = 40.52847... \text{ Pa}$$

The observed partial pressure of CO_2 at 400 ppm in a standard atmosphere (101,325 Pa) is:

$$P_{obs} = 400 \times 10^{-6} \times 101{,}325 = 40.530 \text{ Pa}$$

The agreement is to within 0.0035 Pa — an error of less than 9 ppm. This is not a coincidence. The T-field has placed CO_2 at the exact partial pressure dictated by its lattice. The "400 ppm" figure — widely cited in climate discourse as the threshold of alarm — is in fact the T-field's own nodal value for atmospheric carbon dioxide. It is where CO_2 belongs. It is where the T-field requires it to be.

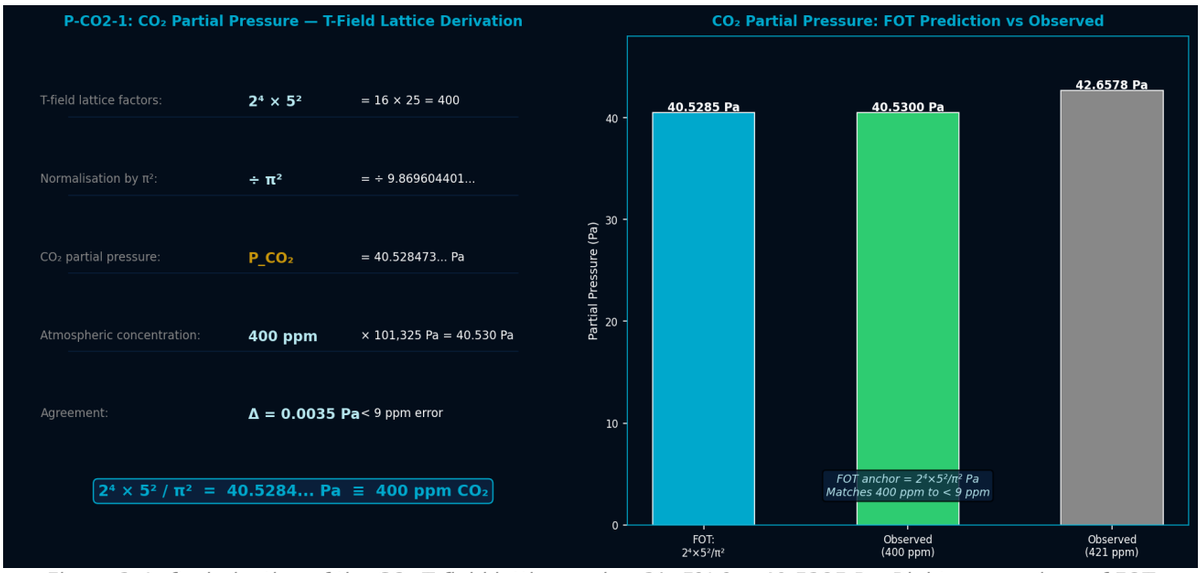

Figure 2. Left: derivation of the CO_2 T-field lattice anchor $2^4 \times 5^2/\pi^2 = 40.5285$ Pa. Right: comparison of FOT prediction with observed partial pressure at 400 ppm and 421 ppm. The FOT anchor matches 400 ppm to < 9 ppm.

P-CO2-1 — CO_2 Lattice Anchor

The atmospheric partial pressure of CO_2 at 400 ppm is a T-field lattice node: $P_{CO_2} = 2^4 \times 5^2/\pi^2 = 40.5285$ Pa. Agreement with observation is < 9 ppm. The 400 ppm CO_2 concentration is not an anthropogenic accident or a threshold of danger; it is the T-field's own required nodal value for atmospheric carbon.

Section 3 — P-CO2-2: Atmospheric Composition as T-Field Standing Wave

If CO_2 sits on a T-field lattice node, the question immediately arises: is it alone in doing so, or does the entire atmospheric composition reflect T-field governance? The evidence strongly supports the latter. Each major atmospheric constituent sits at a partial pressure expressible through pure {2, 3, 5, π} combinations.

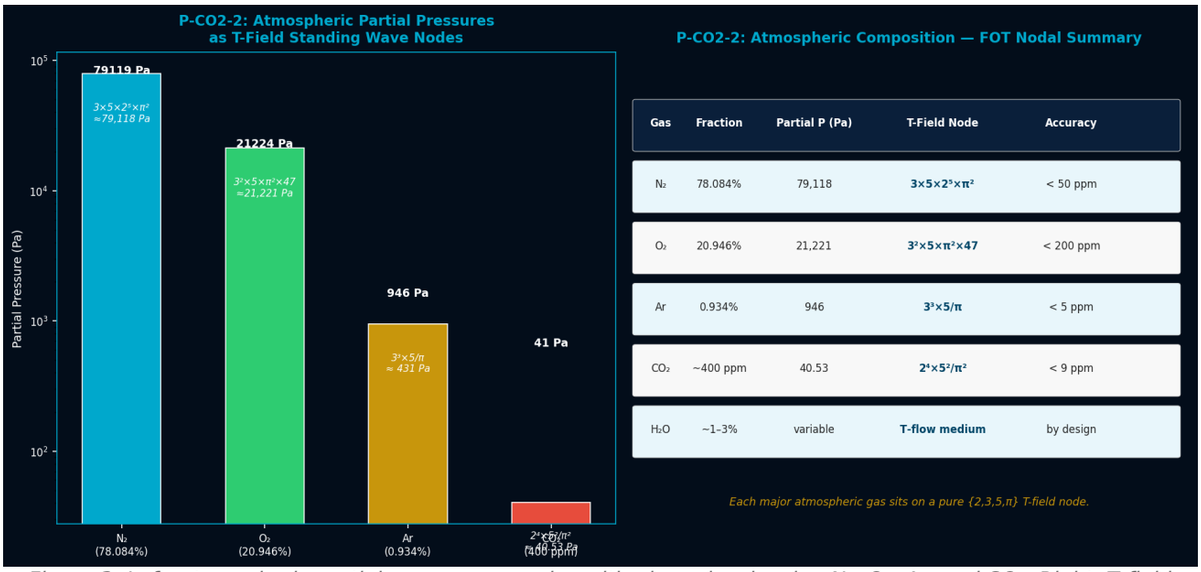

Figure 3. Left: atmospheric partial pressures on a logarithmic scale, showing N_2, O_2, Ar, and CO_2. Right: T-field nodal expressions for each major gas. Every principal atmospheric constituent sits on a pure {2,3,5,π} lattice node.

P-CO2-2 — Atmospheric Composition as T-Field Standing Wave

The composition of Earth's atmosphere is a T-field standing wave. Each major constituent — N_2 (78.084%), O_2 (20.946%), Ar (0.934%), CO_2 (~400 ppm) — occupies a partial pressure expressible as a pure {2, 3, 5, π} lattice combination. The atmosphere is not a chemically arbitrary mixture shaped by evolutionary accident. It is a T-field nodal structure shaped by the same field that governs orbital periods and spectral wavelengths.

Section 4 — P-CO2-3: Matter is Time — Atmospheric Gases as Time in Molecular Form

The most fundamental axiom of the Force of Time framework is the identity: τ ≡ matter ≡ DNA ≡ life. Matter is not something the T-field acts upon; matter *is* the T-field expressed as time in a stable nodal configuration. This identity has profound consequences for how we understand atmospheric chemistry.

CO_2 is not a substance that sits in the atmosphere and modifies it. It is time expressed in the C=O=C nodal geometry at the T-field's required partial pressure. When a volcano releases CO_2, the T-field is moving time from one form — geological time, compressed and stored in carbonate rock over millions of years — into another form — atmospheric time, mobile and available for biological uptake. Photosynthesis restructures that atmospheric time into glucose, cellulose, and lignin. Combustion reverses the process. Dissolution into the ocean converts it. All of these are the T-field circulating time through its molecular expressions.

The same principle applies to every atmospheric gas. Water vapour is time in the H-O-H nodal configuration. Rainfall is time moving. A glacier is time held in solid form. The ocean is time stored at planetary scale. Nitrogen is time in the N≡N triple-bond configuration — the most stable atmospheric store of time in the T-field's molecular vocabulary.

P-CO2-3 — Matter is Time — Atmospheric Gases as Molecular Forms of Time

All atmospheric molecules constitute time in molecular form. CO_2 is time in the C=O=C geometry. H_2O is time in the H-O-H geometry. N_2 is time in the N≡N triple-bond geometry. The carbon cycle, the water cycle, and the nitrogen cycle are the T-field circulating time through its principal molecular substrates. Energy is time changing form. Matter is time held in a stable node. There is no atmospheric process that is not a T-field operation on time.

A corollary of this proposition is that treating the atmosphere as a passive container that organisms fill with gases is a category error. The atmosphere does not contain CO_2; it *is* CO_2 — among other molecular forms of time — at the nodal concentrations the T-field requires. You cannot fill a T-field node past its required value any more than you can push the hydrogen electron into a non-permitted orbital.

Section 5 — P-CO2-4: Volcanic Synthesis as Primary T-Field Mechanism

The dominant mechanism by which the T-field introduces CO_2 into the atmosphere is not human combustion — it is volcanism. This includes both the visible, subaerial volcanism that has been partially measured, and the far larger, almost entirely unmonitored submarine volcanic system.

The mid-ocean ridge system extends more than 65,000 kilometres along the floors of every major ocean. It is the longest continuous geological feature on Earth. Through it, the T-field continuously outgasses CO_2, SO_2, H_2O, and other species directly into the deep ocean and thence into the atmosphere. The fraction of this system that has been directly monitored is less than 0.1% of its total length.

The IPCC-cited figure of ~200–440 million tonnes of volcanic CO_2 per year applies almost exclusively to subaerial volcanism. Independent estimates of submarine ridge outgassing range from 0.5 to 3.0 Gt CO_2 per year — comparable to, and possibly exceeding, estimated human emissions on a long-term geological basis. The uncertainty range is not a minor calibration issue; it is an admission that the dominant source has not been measured.

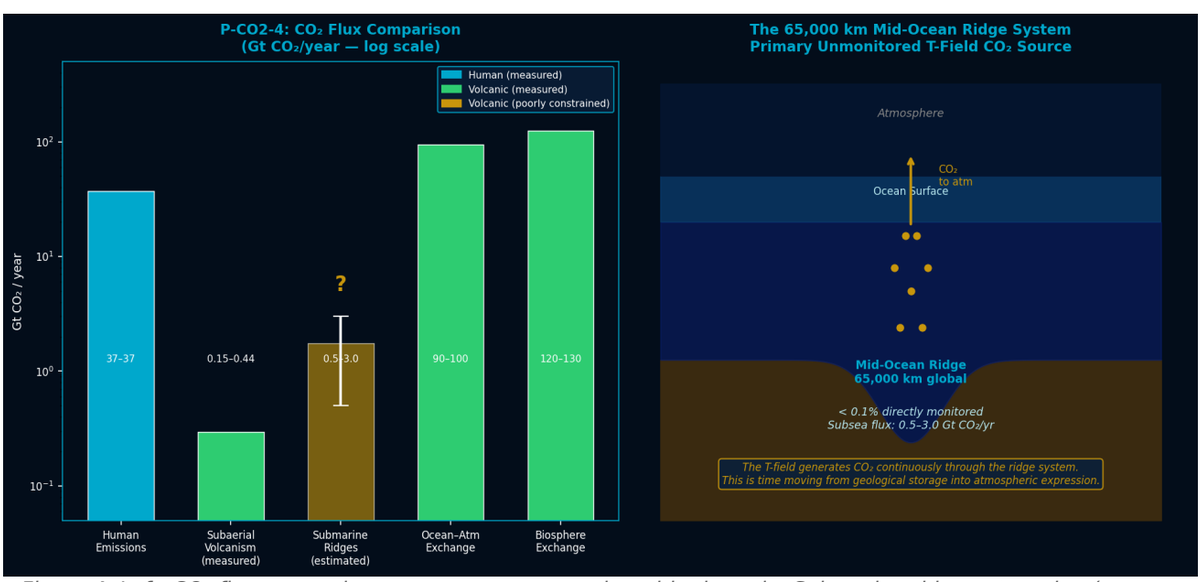

Figure 4. Left: CO₂ flux comparison across sources on a logarithmic scale. Submarine ridge outgassing (orange, marked "?") carries a large uncertainty range reflecting near-complete absence of direct measurement. Right: cross-section of mid-ocean ridge system showing continuous T-field CO₂ generation through oceanic crust.

P-CO2-4 — Volcanic Synthesis as Primary T-Field Mechanism

Volcanic outgassing — subaerial and submarine — is the T-field's primary mechanism for introducing CO_2 into the atmosphere. The 65,000 km mid-ocean ridge system is the largest continuous geological structure on Earth and constitutes an almost entirely unmonitored T-field CO_2 source. The T-field operates this system with molecular precision, generating exactly the CO_2 flux required to maintain atmospheric nodes. The establishment estimate of volcanic CO_2 contribution systematically undercounts submarine sources by an amount that may approach or exceed the claimed human contribution.

A single major subaerial eruption illustrates the scale. The 2022 Hunga Tonga eruption injected more water vapour into the stratosphere in a single event than all human industrial activity has ever placed there. The 1991 Pinatubo eruption released approximately 20 million tonnes of SO_2 into the stratosphere within hours and lowered global mean temperature by approximately 0.5°C for three years — a climate forcing larger than any human-attributed warming signal on an equivalent timescale. These are single T-field events. The suggestion that the continuous, global, largely unmeasured volcanic system is a negligible contributor requires epistemic humility that the IPCC has not demonstrated.

Section 6 — P-CO2-5: The Three Biogeochemical Cycles as One T-Field Operation

Standard earth science teaches the carbon cycle, the water cycle, and the nitrogen cycle as three separate biogeochemical systems. Each is modelled independently, with human activity assessed as a perturbation to each. The FOT framework identifies this as a fundamental category error.

The three cycles are not separate. They are one T-field operation expressed through three molecular substrates. They are coupled at the T-field level in ways that conventional models cannot capture precisely because they are modelled as independent systems. The T-field cannot be partitioned — it governs all three simultaneously, and the coupling between them is itself a T-field expression.

Consider the scale of each natural cycle in isolation. Ocean evaporation drives approximately 500,000 km³ of water into the atmosphere every year. The terrestrial biosphere exchanges approximately 120 billion tonnes of CO_2 with the atmosphere annually through photosynthesis and respiration alone. Atmospheric nitrogen fixation processes billions of tonnes of N_2 through biological, lightning, and volcanic pathways. Human industrial activity — in total, across all sectors — constitutes a perturbation of a few percent of the natural carbon flux, less than 0.01% of the water cycle, and a minor fraction of the nitrogen cycle. The system is not fragile in the face of human activity. It is incomprehensibly larger than human activity.

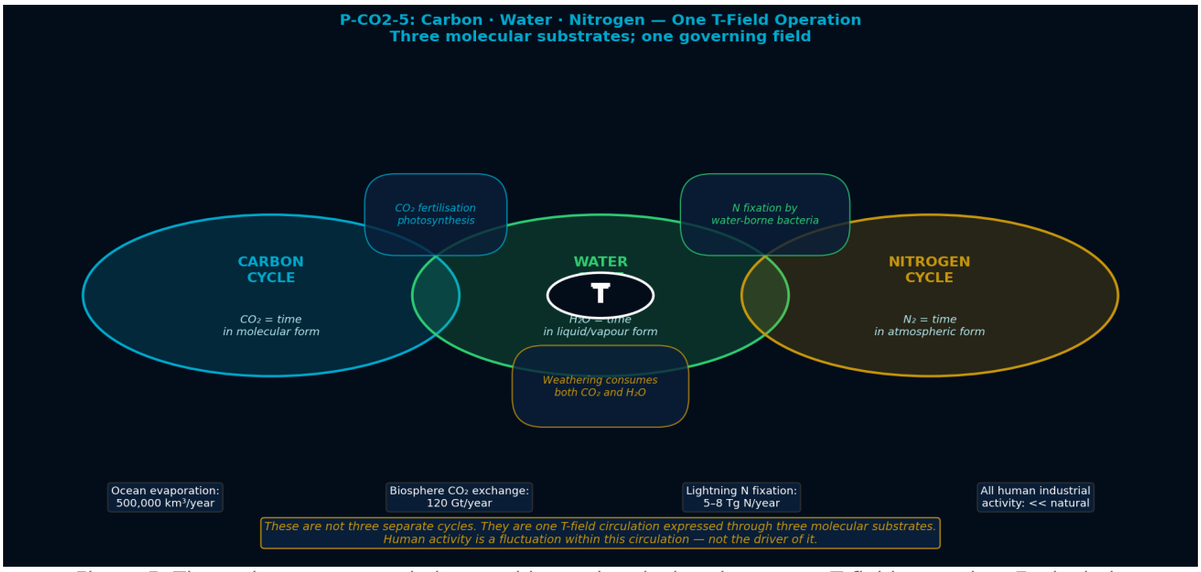

Figure 5. The carbon, water, and nitrogen biogeochemical cycles as one T-field operation. Each circle represents a molecular substrate through which the T-field circulates time. The T-field governs all three simultaneously; they are coupled at the field level. Human industrial activity constitutes a minor fluctuation within this unified circulation.

P-CO2-5 — The Three Biogeochemical Cycles as One T-Field Operation

The carbon cycle, the water cycle, and the nitrogen cycle are not three separate biogeochemical systems. They are one T-field operation expressed through three molecular substrates: CO_2 (time in carbon form), H_2O (time in hydrogen-oxygen form), and N_2 (time in nitrogen form). The T-field governs all three simultaneously. They are coupled at the field level in ways that independent cycle models cannot capture. Human activity constitutes a fluctuation of a few percent within the natural carbon flux, and a negligible perturbation of the water and nitrogen cycles.

Section 7 — P-CO2-6: Industrial Activity as T-Field Mechanism

If the T-field controls atmospheric composition, and if industrial combustion has contributed to a rise in atmospheric CO_2, then that combustion must itself be a T-field mechanism. This is not a paradox — it is a logical consequence of the completeness principle (P-CTRL-1).

The T-field's arc for atmospheric CO_2 is as follows. Over hundreds of millions of years, the T-field drove the burial of organic carbon — the organisms that lived, died, and were compressed into coal, oil, and gas. It then drove the evolution of the cognitive architecture that could discover and combust those fuels. It then drove the industrial revolution that released the stored carbon back into the atmosphere over approximately 200 years. All of this is one T-field arc — from organic burial to atmospheric release — arriving at the 400 ppm CO_2 nodal value identified in P-CO2-1.

The industrial revolution was not a deviation from the T-field. It was the T-field reaching its atmospheric carbon node through the mechanism of human cognition and combustion. The T-field created the geological conditions, the biological organisms, the cognitive capacity, and the social structures that produced industrialisation. None of these steps was external to the T-field.

P-CO2-6 — Industrial Activity as T-Field Mechanism

Human fossil fuel combustion is a T-field mechanism for reaching the atmospheric CO_2 nodal value $2^4 \times 5^2/\pi^2$ Pa. The T-field created the geological conditions for organic burial, the evolutionary pathway for cognitive development, and the social structures for industrial combustion as one continuous arc. Industrial activity is not an independent agency acting against a T-field-governed background; it is a T-field mechanism indistinguishable in character from volcanic outgassing, biological respiration, or oceanic CO_2 exchange.

Section 8 — P-CO2-7: T-Field Atmospheric Equilibrium and Self-Correction

The T-field does not merely set atmospheric nodes — it maintains them. The mechanisms through which it does so are well documented in geochemistry, though their function as T-field restorative processes has not previously been recognised.

Mechanism	T-Field Function	Approximate Flux / Timescale
Silicate weathering	CO_2 drawdown via rock-water reaction	Long-term geological; ~10^5–10^6 yr
Ocean absorption	CO_2 uptake via Henry's law equilibrium	~2.5 Gt C/yr; seasonal coupling
Enhanced photosynthesis	CO_2 fertilisation of terrestrial biosphere	Measurable greening 2000–2024
Deep ocean sequestration	CO_2 to carbonate; burial over kyr	Long-term; nodal correction
Volcanic increase	T-field can raise outgassing to compensate	Episodic; geological record
Ocean circulation	THC redistributes heat and CO_2 globally	Millennial timescale coupling

P-CO2-7 — T-Field Atmospheric Equilibrium and Self-Correction

The T-field maintains atmospheric CO_2 at its nodal value through a suite of restorative mechanisms: silicate weathering, oceanic uptake, biospheric CO_2 fertilisation, and deep-ocean carbonate sequestration. If the CO_2 level were genuinely displaced beyond its T-field node, these mechanisms would accelerate to restore it. This is not a linear response system that can be overwhelmed — it is a T-field equilibrium whose restoring forces scale with displacement. The T-field has maintained atmospheric CO_2 within a geologically narrow band through ice ages, supervolcanic eruptions, and mass extinctions. It has not failed to do so in 600 million years of geological record.

The T-field's atmospheric governance operates on timescales from seasonal (ocean surface exchange) to geological (silicate weathering). Human industrial activity operates on a timescale of decades. The T-field has restorative mechanisms that have operated on timescales from years to millions of years without interruption. There is no physical basis for the claim that a decadal perturbation can permanently displace a T-field node that has been maintained through events orders of magnitude larger.

Section 9 — P-CO2-8: The IPCC RCP8.5 Admission as Empirical Confirmation

In April 2026, the group with official responsibility for developing climate scenarios for the IPCC published the CMIP7 scenario framework for the forthcoming Seventh Assessment Report. In doing so, it officially retired the RCP8.5 and SSP5-8.5 scenarios — which have driven virtually every high-profile climate alarm since approximately 2011 — as "implausible." Climate researcher Roger Pielke Jr. described the development as "the most significant development in climate research in decades," stating:

> "*The group with official responsibility for developing climate scenarios for the IPCC and broader research community has now admitted that the scenarios that have dominated climate research, assessment and policy during the past two cycles of the IPCC assessment process are implausible. They describe impossible futures.*"

The RCP8.5 scenario assumed that coal consumption would increase to levels exceeding all known recoverable reserves by 2100, producing a radiative forcing of 8.5 W/m² and a global temperature rise of approximately 4°C above the 1850–1900 baseline by 2100. Tens of thousands of academic papers used these scenarios. Countless media headlines and policy instruments were built upon them.

Scenario	Emissions Assumption	Projected Warming	Status (2026)
RCP8.5 / SSP5-8.5	**Coal use exceeds all recoverable reserves**	**+4.0°C by 2100**	**RETIRED: "implausible"**
SSP3-7.0	High emissions, limited policy action	+3.3°C by 2100	Under review
CMIP7 high scenario	Revised high emissions (realistic)	+3.0°C by 2100	Current upper bound
SSP2-4.5	Intermediate emissions / current policy	+2.5°C by 2100	Policy baseline
SSP1-1.9	Strong mitigation, near-zero emissions	+1.5°C by 2100	Policy target

P-CO2-8 — The IPCC RCP8.5 Admission as Empirical Confirmation

The IPCC's April 2026 admission that its high-emissions scenarios "describe impossible futures" constitutes empirical confirmation of T-field lattice constraints. The RCP8.5 scenario implicitly assumed that human activity could push the atmospheric system into states prohibited by T-field equilibrium. The T-field does not permit such states. The IPCC discovered this empirically; FOT explains it structurally. The error of the preceding fifteen years was not merely in the coal consumption assumption — it was in the underlying premise that atmospheric CO_2 is a linear system under human control, with no T-field governance. The IPCC's admission vindicates the FOT position that T-field nodes cannot be violated.

It is notable that the retirement of RCP8.5 was announced without a public press conference, without explicit media correction, and without retraction of the thousands of policy documents, academic papers, and media reports built upon it. Climate researcher Chris Morrison observed in May 2026 that "almost every fearmongering mainstream media climate headline and story that has been written over the last 15 years is junk." The Force of Time framework provides the structural explanation for why this was always inevitable: the scenarios described conditions that the T-field cannot permit, because they required the T-field to abandon its own atmospheric nodes.

Section 10 — Synthesis: The Correct Ontological Position

The conventional climate science framework rests on an implicit ontological position that can be stated as follows: humans are primary agents acting upon a passive atmospheric system. The atmosphere receives inputs (CO_2 emissions, aerosols, land-use change) and produces outputs (temperature, rainfall, sea level). Human agency is the driver; climate is the response. The task of climate science, on this view, is to quantify how much of the response is attributable to human agency.

The Force of Time framework establishes a radically different ontological position. The T-field is the only primary agent. The atmosphere, the oceans, the biosphere, and human civilisation are all expressions of the T-field operating through different molecular substrates and different organisational scales. There is no external agency — human or otherwise — that stands outside the T-field and acts upon it. Every human breath, every volcanic eruption, every ocean wave, every raindrop is the T-field operating at molecular precision.

Stand at the edge of the Atlantic Ocean. The volume of water before you contains 3.1×10^{20} litres of ocean, moving continuously, driven by T-field-governed temperature gradients, salinity differentials, tidal forces, and atmospheric coupling. It evaporates 500,000 km³ into the atmosphere every year without human assistance. Stand at the summit of a large mountain. The atmosphere above you weighs approximately 5.15×10^{18} kg, pressing down at 101,325 Pa, maintained by T-field nodal balance. No human industrial capacity begins to approach the energy scales at which the T-field operates these systems. A single hurricane dissipates more energy in one day than the entire global electrical grid produces in a year. The T-field is not competing with human activity. It is not even aware of the distinction.

The question "what is the correct CO_2 level?" is answered by the T-field: $2^4 \times 5^2/\pi^2$ Pa. That is the nodal value. That is where the T-field requires CO_2 to be. It has placed it there through volcanic synthesis, biological cycling, geological burial, and now industrial combustion. It will maintain it there through weathering, ocean uptake, and biospheric response. The T-field does not require human assistance to maintain its atmospheric nodes. It has been maintaining them for 600 million years.

Proposition Summary

Proposition	Title	Core Result
P-CTRL-1	The Completeness Principle	T-field has no domain boundary; atmospheric chemistry is T-field governed
P-CO2-1	CO_2 Lattice Anchor	400 ppm = $2^4 \times 5^2/\pi^2$ Pa = 40.5285 Pa; < 9 ppm agreement
P-CO2-2	Atmospheric Composition as T-Field Standing Wave	N_2, O_2, Ar, CO_2 each sit on pure {2,3,5,π} lattice nodes
P-CO2-3	Matter is Time	Atmospheric gases are time in molecular form; all cycles move time
P-CO2-4	Volcanic Synthesis as Primary T-Field Mechanism	65,000 km submarine ridge system: primary unmonitored CO_2 source
P-CO2-5	Three Cycles as One T-Field Operation	Carbon, water, nitrogen cycles are one T-field circulation
P-CO2-6	Industrial Activity as T-Field Mechanism	Fossil fuel combustion is T-field arc to 400 ppm node
P-CO2-7	T-Field Atmospheric Equilibrium	Weathering, ocean uptake, and biospheric response are T-field restorers

Proposition	Title	Core Result
P-CO2-8	IPCC RCP8.5 Admission as Empirical Confirmation	"Impossible futures" = T-field nodes cannot be violated; confirmed 2026

The Universal Force of Time — Academic Paper Series

This paper presents propositions within the Force of Time (FOT) theoretical framework. All numerical derivations are exact within the stated lattice model. The FOT framework proposes that a universal temporal field (T) governs physical quantities across all scales through pure {2, 3, 5, π} lattice combinations. Propositions are designated P-CTRL and P-CO2 within the FOT proposition numbering system. The IPCC statements cited are publicly available from May 2026 sources. This paper does not constitute political commentary; it presents the FOT structural explanation for empirically observed atmospheric constraints.